American Journal of Public Health
and THE NATION'S HEALTH

Volume 37 June, 1947 Number 6

What Is Health Education?

A Symposium Prepared at the Request of the Editorial Board

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HEALTH education is the sum total of all our experiences and motivations which add to health knowledge or influence health behavior.

Health education is much bigger and broader than what we commonly think of when this term is used. Teaching in the schools about health is health education. So also is some of the indiscriminate radio listening done at home. Living in the home or school constitutes health education for better or for worse. If school environment, either physical or psychological, clashes with theoretical teaching then we may have health education of a negative sort.

Health education includes a great deal of influence derived from commercial sources. The high place held by citrus fruits in our diet is due only in part to an appreciation of their dietary value and much more to the initiative, enterprise, and competitive zest of the fruit growers of California, Arizona, Texas, and Florida. In the same way, the acceptance of coffee as a national drink and the tremendous use of soft drinks is a reflection of our health education experience as a whole. Whereas the use of citrus fruits, for example, indicates a positive balance of forces, the excessive use of coffee and the widespread abuse of tobacco represent a negative balance in the forces which determine the resultant conduct of the individual.

Health education has two principal components: information and motivation. Information may be all true, part true, part false, or all false, according to Donald B. Armstrong's classification in his article "Can It Now Be Told?" * Motivation may be positive or negative and this may depend in part on information. Mere giving of information or its passive acceptance is only a part of health education because it does not inspire conduct and, therefore, leaves the situation essentially unchanged. Conduct is inspired by the urge to do something. This urge may be based on fear, ambition, jealousy, determination, malice or any combination of these or other emotional drives. In health education, as in religion, there is no action unless motivation takes place.

* *Health & Phys. Educ.*, VI, 6 (June), 1935.

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What is health education? To my way of thinking, health education is a matter of teaching the community and the individual how to guard against health hazards. It is up to the health department to protect public health just as it is up to the police to insure public safety, and up to the home, church, and school to set good standards of behavior.

In Chicago, we provide among other facilities laboratory services, infant welfare clinics, treatment and isolation for communicable diseases, and school hygiene service. The value of these facilities to the public depends on the use the public is taught to make of them.

We use the direct approach; we frankly advertise Health Department services. With 3,500,000 people to educate, we follow the example of the successful business enterprise with a product to sell.

Our "product" is public health service. We publish simple, graphic material about every phase of public health and build special publicity campaigns to combat new health problems as they arise. Over the years, the public attention we have focused on infant welfare has been an important factor in maintaining our low infant mortality rate. The backbone of this campaign has been the widespread distribution of accurate, detailed, but easy-to-read literature.

In a health education drive against diphtheria, the entire health department staff took to the field for a city-wide canvass of families with preschool children who had not received toxoid inoculations.

A current example of our education tactics is our VD control program. In VD, we had a health problem the public had long preferred to ignore. Led by the *Chicago Tribune*, the press helped us launch our campaign in 1937.

Last February — "VD Control Month" by proclamation of the Mayor —our public information drive cosponsored by the Chicago Junior Association of Commerce included car card advertising and radio as well as newspaper coverage. The 50,000 VD tabloids handed out to Loop shoppers and workers as a publicity stunt were pocketed readily whereas twelve years ago, few people would have accepted them.

During the war, we developed an education program for the city's 8,000 liquor licensees to deal with the promiscuous encounters leading to VD which were taking place in taverns. Not only did the owners coöperate, they underwrote the printing and distribution of 3,000,000 matchbooks with VD control copy.

These few illustrations represent the kind of health education we are doing in Chicago and the kind we are finding successful.

MARY P. CONNOLLY, F.A.P.H.A.

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Health education is that process by which persons become aware of health needs and practices which they may establish to meet these needs. Certain of these practices are dependent upon facilities.

Who is responsible for health education? The physician in his office when

he indicates a way of life to a patient; the dentist when he instructs a patient regarding means to prevent tooth decay; the school teacher when she provides education that will cause students to take on attitudes and habits that will promote health; the health officer who recognizes that City Fathers and county supervisors must understand health problems and the means of solving them if money is to be appropriated to support public health administration. The public health engineer and the sanitarian are responsible for health education in their efforts to establish safe water and milk supplies and adequate housing for families. The public health nurse employs health education as her tool to help mothers to seek prenatal care for themselves and preventive medical care for their children. The health educator promotes health education when he interests citizens in taking responsibility for health promotion projects. In addition, the health educator utilizes the media of publicity to make persons sensitive to health problems in order that they will seek education to solve these problems.

In a democracy, people perform as they understand. Understanding comes from participation. Everybody can learn on some level, and participate on some level. The various levels will add up to a healthy citizenry. This summary is my understanding of health education.

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Some of the others contributing to this symposium have thoroughly described the wide variety of activities that are incorporated in a program of health education. Such a definition considers health education from the point of view of the professional worker. It is a series of things that are done to, and for, people with the purpose of improving their health information, attitudes, and behavior. Certainly any adequate answer to the question "What is health education?" must include a full recognition of these tools and techniques in the program.

In addition, however, health education may be considered from the point of view of the public or layman. As such it is the *change* that takes place in his knowledge of scientific health facts, in his attitudes toward preventive and curative health practices, and in his daily living habits as a result of his many experiences. It is the knowledge gained about microörganisms and their role in disease from reading an article on the subject; it is the public support given a health department because of its effective work on an epidemic; it is the appreciation of a doctor's diligent medical attention in a severe illness; or it is the visit to a cancer detection clinic after attending a cancer field army meeting.

But not all the changes are so favorable. Some are negative, as for example the resistance built up to clinic attendance as a result of long waits on hard benches and little help on personal health problems, or the feeling of futility that comes from participation in a blood survey or diabetes survey when no information on the individual results is given, or the use of an onion and bacon poultice on a swollen limb on the advice of a neighbor, or the lack of confidence in a periodic medical examination when a very superficial inspection is given.

Because many of the services which

the public receives from medical and public health personnel are charged with emotional reactions of fear and anxiety, they have great potentialities for health education. If the service is rendered in a pleasant manner and meets the need of the individual *as he sees it*, favorable attitudes (positive education) will result.

Conversely, only one unsatisfactory experience is sufficient to develop resistance and distrust, which is very difficult to overcome through any educational effort (negative education).

This consumer reaction phase of health education has been emphasized because the effectiveness of strictly educational efforts is greatly enhanced when medical and public health services are rendered in a manner satisfactory to the people.

Health education then is not only the activities of the professional public health workers, but also the reactions of the people to *all* their experiences with health significance.

THOMAS D. DUBLIN, M.D., DR.P.H., F.A.P.H.A.

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Progress in medicine and public health cannot be judged solely in terms of monumental scientific discoveries or of important technical advances in methods of diagnosis, treatment, and prevention of disease. It must be measured also by the speed and completeness with which available knowledge and skills are applied to the total health and medical needs of all members of society. There can be no question that ignorance, fear, superstitution, and indifference create an imposing barrier between what modern society is prepared to accomplish and what is actually being done to protect and improve the health of the individual, his family, and the group as a whole.

If this barrier is to be broken down, the medical and health professions must devote even greater energies than in the past to the education of the public in the proper use of the tools which science and technology have fashioned.

Public health is turning progressively toward those health problems which can be solved only by dealing directly with the individual. Simultaneously the basis for medical care is gradually shifting from palliative and curative measures to the socially far more valuable pursuits of prevention of illness and the maintenance of health. These changes have already broadened the horizon of health education to include a concept of health as more than the mere absence of disease but rather as a state of social, psychological, as well as biological, adjustment of each individual to his total environment. Accordingly health education must assume its proper place as a highly personal service motivating the individual toward healthy living; arousing social action to create conditions conducive to health within every community; and developing awareness and stimulating effective use of the vast health and medical resources which an enlightened society provides to meet the fundamental needs of its members.

With increasing specialization of health and medical services we have established a group of technically trained workers, and others not so well equipped, and have assigned to them the task of educating for health. In so doing we have almost forgotten that by definition the physician is the teacher and health educator of those whom he serves. Though he is no longer the sole provider

of professional care and now represents only one in ten of those engaged in health and medical services, it is still to him that the individual first turns for help and guidance. It is clearly the physician's task to direct, correlate, and supervise the work of all other workers in the health field and to aid his patients in utilizing available skills. In these relationships alone, the physician has an unparalleled opportunity, as well as an obligation, for health education.

In recent years special schools and special classes have been established to train professional health educators for their appointed tasks. At the same time we have neglected this phase of the education of the one individual through whom all health services should properly be channeled. Health education is inescapably a major function of the physician, and yet it is an activity for which he, at present, is least prepared by training and experience.

ELIZABETH G. FOX, R.N., F.A.P.H.A.

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Others will expound the virtues of popular health education. And, when scientifically accurate and psychologically sound, mass education assuredly has its place. Perhaps it is most effective in those areas where there is little conflict with deeply rooted patterns of living and personality needs and where the pressure of social usage is greatest—for example, in creating popular acceptance of the value of immunization. But when the going is hard, when the individual course of action is inconvenient, difficult, disagreeable, or expensive, natural inertia and emotional resistance are easily rationalized. Something more than knowledge is needed to overcome them.

Fitting general principles to one's own particular requirements and means, or to the circumstances, ways, and feelings of one's family often calls for individual instruction suited to the specific situation. The taking of insulin and arrangements for a diabetic diet is a good example, or the putting into practice of the principles of child health in the daily rearing of one's own children.

When action is called for, which is painful for emotional, social, or financial reasons, motivation becomes a highly personal matter. Some individuals are so well balanced that they can come to terms with the situation and take action without aid. Even with these individuals, the price may be undue expenditure of emotional energy.

For many others, when the situation is fraught with known and unknown obstacles—fears, social pressures, the threat of a break in personal relationships, or wholly unconscious factors—the individual becomes driven by emotion, and reason plays little part in his reactions. In such instances a counselor is needed who understands, at least in part, the art of attentive listening and of helping the person concerned to express and accept and deal with emotions blocking action. Such counseling, when safeguarded by medical knowledge, is personal health education at its best.

Let popular health education, then, prepare the ground and sow abundant seeds. But for the painstaking cultivation, let us turn to the individual counselor. It is he or she who translates general knowledge into familiar terms related to the particular individual's personality and circumstances. It is he or she who, with friendly understanding, helps the individual to make practical

application of medical truths and to meet some of the emotional hurdles in his way.

Amidst the manifold diversities of individual lives, personal health counseling by the physician or public health nurse—the ancient way of one pupil and one teacher sitting down together and talking over a live situation—surpasses all other methods.

HOWARD WHIPPLE GREEN, F.A.P.H.A.

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The education of the public toward good health is a community program of considerable magnitude. Most decreases in the death rate resulting from improved water and milk supplies and the like have already been realized.

This means that further reductions in the death rate are dependent upon what individuals do for themselves. This in turn is dependent upon what they know, are taught, and made to desire. All available methods of health education are put to work to help influence as well as teach the thousands of individuals who make up a community.

The status of health of inhabitants of an area must be determined by careful statistical studies in order to serve as the basis of sound local health education programs.

Health education to be effective must be directed toward specific groups of individuals whose educational and intellectual levels are known. Teachers, college students, school children, patients, and the general public each present a different problem. Knowledge as to the grade of school completed by various segments of the adult population is also most helpful in planning health education programs which are within the grasp of various segments of the population.

Health education must be based upon detailed knowledge of the specific subject to be treated as, for example, diphtheria. The fact is that if a child is immunized before his first birthday, he does not contract the disease. Since babies cannot receive health education —and if they could, could do nothing about being immunized—the individuals to reach are their fathers and mothers; and there is little use in motivating them to have their infants immunized until private physicians and public health services are ready and anxious to serve.

Health education utilizes both the written word—direct mail, posters, bill boards, newspaper and magazine articles, and so forth—and the spoken word—speeches before all sorts of groups and the radio. It puts to use exhibits which appeal to the eye and exhibits which the visitors help operate. The material is taken to the individual citizen, the expectant mother, the mother with an infant or preschool child, the schoolchild, the youth, and the adult. Men, women, and children receive health education in an active health museum, in interesting lecture courses, health institutes, and so forth.

It is not enough to teach; health education must also play upon the basic human interests, such as love for children, desire for athletic strength, and pride in continuous work without loss of days from sickness. It should set up a goal of radiant, positive, good health as contrasted with mediocre or partial well-being.

WILLIAM S. GROOM

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To answer this question in four hundred words is a typical assignment for the health educator. Today he must condense the subject of cancer control into a car card. Tomorrow he is expected to tell all about tuberculosis in a two paragraph poster.

His is the task of teaching all that is useful and safe for the layman to know about that vast and complex body of knowledge called medical science. And he must accomplish this with the utmost brevity and simplicity; otherwise few will read or listen and fewer will understand and remember.

Having used the first hundred words to express his appreciation of the task in hand, he must now explain all about health education in the remaining three hundred.

In my judgment the primary purpose of health education is to disseminate authentic information and advice which the layman may employ to:

1. Promote optimal health
2. Escape preventable illness
3. Recognize certain symptoms which justify prompt investigation by a competent physician
4. Participate, as a citizen, in the organized health program of his community

Instruction of the ill in the management of their illness is without the province of the health educator. This belongs to the physician and the nurse.

In promoting these four main objectives to the adult public, mass media must be employed and the health educator would do well to recognize the experience which commercial users have had with such media.

When an entire radio period is filled with a speech, a round table discussion, or an interview, all but a few listeners will tune into some other program. Likewise when a press "story" or other printed material is long and involved it will collect relatively few readers.

Too often we have achieved too little because we have attempted too much. If the layman is to read, to understand, to remember, and finally to employ our information and advice, we must not confuse him or tax his memory with more than the barest essentials. This rule applies to the great majority. On the other hand, there are some who will read the most lengthy and detailed health literature and believe themselves capable of lay diagnosis and self-medication.

There is an old rule of economics, "good enough is best." More than that is too costly and thus inefficient.

Let us try then to select and disseminate "that minimum of information which may provide a maximum of usefulness."

SALLY LUCAS JEAN, R.N., F.A.P.H.A.

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Thirty years ago Health Education was a new term. Now this new tool for the promotion of public health is universally accepted.

Health education involves people. It converts them to accept scientific health knowledge with such confidence that they will discard hearsay and tradition and adopt for their personal use only those health practices which have a scientific basis. As citizens they will be so concerned with the value of modern

health measures that they will make their voices heard at the polls and in the halls of legislation where many of the public services affecting our environment are determined.

Health knowledge is important to bring this about but knowledge alone is not enough, there are other factors to be considered. Excellent papers on all phases of health are submitted by students whose living habits continue unaffected. A few years ago a high school girl in the Philippine Islands wrote a splendid term paper on beriberi. She presented acurate statements as to whole grain rice and other easily obtainable foods as preventives just two weeks prior to her death from the disease.

A teacher in the New York City schools died within the last three years of hydrophobia, declining to accept treatment for rabies while there was still time for it to be effective. There were 16,192 cases of diphtheria in the United States reported in 1946, though a preventive has been easily procurable for twenty years.

The Philippine student, the teacher, and the parents of diphtheria patients had knowledge, yet had not been sufficiently impressed by the facts to apply them.

Training in health matters involves the creating and developing of attitudes favorable to the acceptance of such knowledge at a time when a readiness exists. Then, too, the process of educating youths in health varies with sex, age, and experience.

Experience probably influences health practices to a great extent. Health education attempts through every medium known to furnish information and to create receptive attitudes toward health facts, utilizing planned and incidental experiences.

Propaganda is often mistaken for education, and there is a legitimate place for propaganda in arousing interest in health; but in education the learner is active while in propaganda the recipient is passive.

In each generation the people have had to be educated to disbelieve much of the teaching of their progenitors and to accept newer knowledge. This is a laborious process. When youths can be so instructed that they will develop confidence in well documented scientific facts and be prepared to accept new truths, the health education of adults will be greatly facilitated but we will always have to develop those attitudes and interests which motivate sound health practices.

BLEECKER MARQUETTE, F.A.P.H.A.

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Health education is many things—not one.

To the teacher of physiology, it is giving instruction about the body and its functions. To the teacher of civics, it is the study of community health facilities and needs. To intelligent parents, it is guiding their children from birth in the knowledge and practice of sound habits of mental and physical health. To the public health minded doctor, dentist, nurse, it is instructing patients as they see them in homes, offices, clinics, and hospitals in the prevention of disease and in the ways of health. To the health officer, it may be primarily acquainting the public with the methods by which his health department works for their protection and developing citizens' support for an adequate well staffed department.

To those concerned in a broad pro-

gram of health education, it means all processes by which citizens are taught essential truths about health with the specific purpose of: (1) Instilling habits of living that will promote physical and mental well-being. (2) Acquainting the public with health activities and health needs and developing support for a sound and comprehensive health program for the community, the state, and the nation.

But not all health education is of this beneficent type. The advertisement which subtly pursuades the obese to use reducing drugs; the radio "plug" that makes a convincing appeal for a dentifrice guaranteed to whiten the teeth or retard caries; the movie that gives a completely distorted conception of psychotherapy; the cultist who advertises some panacea to cure all ills; the quack, the nostrum vendor, and even the backwoods housewife who earnestly advises cobwebs for cuts and burns—all this is health education in reverse, but health education nevertheless. It is not to be discounted when we speak of education about health because these forces make a powerful appeal to the emotions and often with consummate skill. They exploit human desire for the easy way and the simple remedy.

One of the tasks of true health education is to offset these negative influences. Until we do, we shall never put fully into effect the invaluable tools for health that medical science continues to give us.

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Through the years, definitions of health education have been more or less influenced by prevailing concepts in the two fields concerned—health and education.

Some persons have visualized health education as classroom instruction; others have thought of it as medical inspection in the schools, sanitary inspection of the environment, or physical education; others have seen it as publicity, a visit from the public health nurse, or listening to a lecture; and still others have encompassed the entire school or community health program in their interpretation of the term. Individual definitions have varied from the specific to the all-inclusive; but in an atomic era, when man's concern lies in *world* health, it is logical to seek a definition in terms of a total health education program for *all* people, and to attempt to find a mooring for it in the natural laws of human existence.

It is man's fundamental right to achieve the maximum health for which he is biologically capable, but to attain this he must learn to cope successfully with his physical and social environment. In the past such an adjustment to living has not been possible, because scientific knowledge has not been translated into everyday language and action. Therefore, one of the immediate objectives of a total health education program is to help bring scientists, educators, and laymen together so that each will understand the other and so that all can learn to work as a unit toward a common goal—positive health for *all* people. In addition to being concerned with this immediate objective, health education must help man to understand the problems of human behavior in relation to the uncompromising laws of nature and must help him recognize his importance in the universal scheme.

Such a program of health education,

or education for living, calls for a redirection of the teaching of health and education, away from peripheral specialties and superficial efforts in organization and techniques, to a program which will apply scientific knowledge to everyday living and make it possible for each individual to become a contributing partner in a world where not only man's health but his very existence depends upon his opportunity to think, observe, and plan in terms of all people.

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Health education has become an ambiguous term, signifying to one person the health teaching procedures which are carried out in behalf of people; to another an intangible summation of experiences which have left their mark on a person's behavior with respect to health. Still a third concept is that health education is a process of change within the human organism itself which is related to achieving personal and community health goals. It is to this third definition of health education that this writer subscribes.

The question seems to be this: Is health education synonymous with health teaching or is education in health (health education) a process of learning (a process of self-building)? Teaching and learning are not the same thing. In the last analysis learning takes place only through the efforts of the learner. Thus, health education cannot be "given" to one person by another; it is not a set of procedures to be carried out or a product to be achieved; rather it is a dynamic ever-changing process of development in which a person is accepting or rejecting new information, new attitudes, and new practices concerned with the objectives of healthful living.

This is not quibbling with words. It is a difference which suggests that health teaching must be focused on *providing situations* conducive to learning. It is a difference which indicates that our emphases in a program of health teaching must be changed from attention to what is being done by the teacher to what is happening in the learner. Thus, the techniques for teaching health take their proper place as aids to facilitate learning, and their use will depend upon the degree to which they help a person in a given stage of the learning process. Some teaching aids impart authentic information; others develop motivations and desires to take action; still others enable the learner to participate in activities which bring satisfaction in their doing.

The armamentarium of the health worker, then, be it a scientific lecture, film, exhibit, pamphlet, conference, demonstration, discussion technique, or group planning activity, needs to be assessed as to its appropriateness in contributing to the development of a person in the stage of learning at which he finds himself.

If a "program of health education" means a program of providing situations for people in which, as learners, they "educate" themselves, then we have no quarrel with such a program. If on the other hand a "program of health education" implies that the health worker using his bag of techniques is doing the educating we must seriously disagree.

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1. Health education is a means of persuading people to understand, accept, and apply that which will help them to live joyously, and productively, and to keep free from mental and physical deterrents for as long as possible.

2. Under an absolute dictatorship, volunteer health education would have no place whatsoever. To improve individual and community health, perhaps for military purposes, the dictator would merely issue commands to his subjects to do certain things, or else. This fantastic possibility has not yet been dramatized by some frustrated health educator discouraged over having to live in a democracy whose citizens pay him too little mind and consequently live incompletely and die prematurely. Regimentation may have its good points.

3. But for free people, obliged to make many decisions daily to do or not to do this or that, to shape their mode of living, education in health is one of many things to which they must be exposed, whether it takes or not. That is where the trained and skillful health educator comes in to provide subject matter and some sugar coating, an overall plan and individual incentive, plus occasional arresting devices to compete with other claimants for attention in a bewildering world.

4. When health education is aimed at the individual, it is with the hope that he will manifest his enlightenment by better personal health habits. When directed at communities a majority acceptance is sufficient. The unresponsive minority otherwise engaged will enjoy the new benefits anyway.

5. Health determining factors vary. In some parts of the world health education must begin with sanitation of the environment. Elsewhere, these problems have been replaced by others, including the distribution of medical care, the degenerative diseases, and problems affecting an aging population. Health education is not static. It is ancillary to scientific progress. Every now and then discoveries are made of important health significance. Potential beneficiaries must depend upon health educators in various guises to serve as transmitters between producers and consumers. Thus, health education is an important means of helping people achieve a higher level of living.

6. The real test of health education work is not how attractive are the hook and worm, but how many fish are caught; not how varied or fancy the sales techniques, but how many people bought the product for themselves, and are so satisfied that they tell their neighbors the good news.

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Health education is an instrument which society uses to help assure individuals the benefits of modern medicine and public health. It helps them to understand themselves as living organisms and to become familiar with the various influences that affect health. It acquaints them with community resources for protecting and improving health, and helps them to solve individ-

ual and community health problems. Health education, therefore, is a means of securing widespread understanding and utilization of modern knowledge concerning health promotion and disease prevention.

What Is Health Education? may be answered by the following definition: Health education is the process of providing experiences for children and adults for the purpose of favorably influencing their knowledge, attitudes, and practices relating to health. Elaboration on the meaning and significance of certain words in this definition will help to clarify the nature and scope of health education as well as the total implications of the definition.

The word "process" indicates that health education doesn't just happen; it is carefully planned and efficiently conducted, with appropriate consideration of ultimate goals and of the best means for reaching them. Although unplanned experiences contribute to an individual's education relating to health, the teacher or health educator is concerned with supplementing incidental experiences with those that are carefully selected for their known value in attaining specific goals.

"Experiences" is used in keeping with present-day concepts of how individuals learn. The health educator and teacher are concerned with providing numerous and varied experiences and their work involves using all the techniques in the educator's armamentarium: reading and discussion, projects and recitations, audio-visual aids and problem solving, lectures and conferences, visitations and debates. The experience may take place in a classroom or conference, in the hospital or physician's office, in a committee meeting, or at home. Regardless of the technique used or the place where the experience occurs, the health educator is aware that interest and active participation facilitate learning. The student, whether child or adult, is given opportunities to share in planning and to "learn by doing."

The words "knowledge, attitudes, and practices" indicate three aspects of learning, each of which is important in health education. We are concerned with what individuals know, how they feel, and what they do. Influencing a person's health interests or attitudes, or changing his behavior, are just as important as helping him to secure understanding. Actually, knowing, feeling and doing are so closely interrelated in the learning process that it is almost impossible to separate them, except for discussion purposes.

Obviously, the word "health" refers to a condition of the total individual, and has physical, mental, emotional, and social components. Furthermore, health is considered a resultant of inherited endownments and of such environmental factors as personal and community health practices. Important goals of health education are to help each individual develop desirable personal health practices and to share in community health efforts.

Health Goals for Housing*

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Committee on the Hygiene of Housing, American Public Health Association, New Haven, Conn.

OBJECTIVES OF THE COMMITTEE

THE Committee on the Hygiene of Housing was established in 1937, at the request of the Housing Commission of the Health Organization of the League of Nations, and as one of the national committees corresponding with that Commission. Since that time it has served as the active housing arm of the American Public Health Association, and as a national clearing agency on health aspects of housing.

The committee's work is addressed to basic problems having practical significance for housing, nationally and internationally. Its aims have in the main been twofold: (a) to develop technical and administrative tools for housing improvement: standards for housing based on public health knowledge, means for evaluating departures from such standards, and legal and administrative procedures for the regulation and improvement of housing; (b) to enlist the interest of housers in health and of health workers in housing, and to promote coöperation between these workers and related groups in a comprehensive attack on the housing problem.

The members of the committee include representatives of public health and housing administration, city planning, sanitary engineering, architecture and construction, heating and ventilating research, sociology, home economics, research in statistical methods, and the law.

Programs are laid down and general policies shaped at annual or semiannual meetings of the full committee. Investigations are carried out by research subcommittees (including coöpted expert members from pertinent special fields), which conduct interim work-meetings as needed and are serviced by the committee's full-time staff.

The first adventure of the committee was the preparation of a report on "Basic Principles of Healthful Housing" (first published in 1938, with a slightly revised version in 1939). This report outlined in specific form thirty essential health needs which must be met if the dwelling is to provide a healthful environment for the family of the future. These are grouped under the four headings of Fundamental Physiological Needs, Fundamental Psychological Needs, Protection Against Contagion and Protection Against Accidents. This pioneer effort has been received with gratifying interest and has been generally accepted by authorities in many countries. It has recently been chosen by the American Institute of Planners as one of two American documents to be translated into Spanish, Russian, and other languages.

The committee next set about the expression of these Basic Principles in more concrete terms of performance through which the aims of adequate housing could be implemented by health officers and by public bodies and private groups and individuals interested in one

* Approved by the Committee, March 8, 1947.

way or another in the erection of future dwellings. Many collateral studies were carried out, some of which are described in a book, *Housing for Health,* in 1941, embodying the results of a conference called by the Milbank Memorial Fund. The major lines of work undertaken will be discussed in succeeding paragraphs of the present report. After ten years of the life of the committee, it seems timely to review our accomplishments and to chart our general course for the future.

This is particularly important, since the committee seems to stand today on the threshold of greater opportunity. Thanks to the continued generous support of the Milbank Memorial Fund and to the contributions made from time to time by other foundations and agencies, we have kept the ship afloat, although sometimes with anxious and difficult moments. The loyal support of the headquarters office of the American Public Health Association, the widespread and enthusiastic support of our efforts from the U. S. Public Health Service, city and state health officials, housers and planners, and the dawning interest in our work in other countries, gives us confidence that this work will continue—and on an expanded scale.

The program presented below embodies five major lines of activity, all more or less clearly visualized in earlier memoranda, but presenting, in greater or less degree, immediate challenges for the future. These objectives must be considered somewhat in detail. In many cases a present or clearly impending pressure on the committee from outside sources, growing out of recognition of past achievements, has been brought to our attention.

I. *Measuring the Quality of Existing Housing*

A central question in any program of housing improvement is: How bad and how extensive are the conditions to be remedied? The health deficiencies and general quality of housing in slum areas must be measured objectively if enforcement policies of local health and building departments are to be intelligently shaped, and if rehousing programs are to meet real needs. At the time of the committee's inception no adequate method for such measurement existed. The survey procedure most widely used by housing authorities in judging the need for public housing has been the Real Property Inventory, a method of very limited usefulness because of the few factors covered and dependence on subjective schedule items. Inspection data from local health and building departments have usually been even less helpful to the housing agencies, because problem areas have not been systematically covered, because of unclear inspection forms, lack of any qualitative summation of the findings, and other factors.

In response to requests from health officials and housing authorities, the committee has concentrated a major part of its effort in the past several years on developing an inspection and appraisal method to meet this need of both enforcement and reconstruction agencies.

The appraisal method provides for observing a sufficient number of objective factors in housing quality to permit conclusive judgment as to the healthful adequacy of individual dwellings and of entire problem areas. The measurement of housing quality is expressed through a system of scores which has been thoroughly tested and has gained the approval of competent statisticians in the field of scale measurement. The results are finally expressed in the form of quantitative penalty scores and of specific basic deficiencies. The latter can be immediately used by the health department or other regulating authorities for rehabilitation orders or condemnation. The penalty scores, when

plotted on a map, provide the planner and the housing authority, as well as the health officer, with invaluable data for long-range policies.

The appraisal procedure was prepared with the greatest care and with the counsel of the best available experts. It was tested and retested on a practical scale and finally embodied in three monographs: one on the general philosophies and procedures involved, one on the appraisal of the dwelling unit itself, and one on the appraisal of the environment—a wholly new contribution to the housing problem. The first of these three volumes was issued over a year ago, the second will be issued in the immediate future, and the third is complete in manuscript and only delayed by shortage of staff at the printers.

This part of our job is done; and the reception of the appraisal procedure has been more enthusiastic than we had dared to hope. It has been officially used in Brookline, Mass.; in various small semi-rural areas of Connecticut; in Los Angeles, Calif.; Milwaukee, Wis.; New Haven, Conn.; Philadelphia, Pa.; Portland, Me.; St. Louis, Mo.; and Washington, D. C.—as well as in Panama City, Republic of Panama. The studies at Los Angeles and Milwaukee have already been conducted for over a year.

In these cities the findings are being used as the basis for the coördinated administrative policy of official agencies. Philadelphia, after a preliminary trial, has embarked on large-scale use of the technique to guide its ambitious program of urban redevelopment. Wherever it has been really tested this appraisal method has won ardent converts; and the U S. Public Health Service is making earnest efforts to promote its use throughout the country.

We have now an acceptable, and accepted, measuring stick for the substandardness of housing.

II. *Establishment of Standards for Housing of the Future*

Our second problem, in a sense complementary to the first, was the formulation of broadly conceived but specific standards of performance for the new housing to be constructed in the years to come. We instituted this project in 1944 by the appointment of four subcommittees, to deal respectively with the Neighborhood as a suitable environment for the home, the Occupancy Standards involved in planning the dwelling, the Construction of the home and its Equipment. These subcommittees, under the chairmanship, respectively, of Frederick J. Adams, James Ford (succeeded by Clarence W. Farrier), Henry S. Churchill and Helen W. Atwater (succeeded by Mary Rokahr) have attacked their problems effectively. We have recently decided to concentrate the last two of these reports into one so that the final series will include three volumes, as follows:

1. The Neighborhood Environment of the Home
2. Planning the Home for Occupancy
3. Construction and Equipment of the Home

In each of these three monographs it is hoped to formulate definite and specific performance standards with regards to neighborhood and site planning, planning of the home itself for occupancy and construction, and equipment of the home. "Standard" requirements will be suggested which should govern all new construction; and, where appropriate, a "lowest tolerable minimum" (failure to meet which would justify legal action for rehhabilitation or condemnation) has been indicated; also, at times an "optimum," desirable where financial resources make it possible to exceed the "standard."

In the preparation of this series of monographs, we have been fortunate in the coöperation of the National Housing Agency, which during the past fall and

winter worked with us closely and intimately so that our joint conclusions will have assurance of official backing.

Volume I of this series, dealing with the Neighborhood Environment of the Home, was approved for publication at the March meeting of the committee. The preparation of the other two monographs is now our primary task and it is hoped that this task may be completed by the close of the calendar year. It is vital that the work be accomplished without delay, since so much of the home construction now under way is of so poor a quality as to constitute little more than an addition to our slum problem.

III. *Strengthening and Clarification of Housing Regulation and Their Enforcement*

A third major project, envisaged in our earlier memoranda, was the study and improvement of practice in the field of housing regulation by health departments and other official bodies. In this field there is a considerable amount of valid precedent. Though out of date in some particulars, Veiller's Model Housing Law of 1920 (adopted in whole or part by several states and cities) is a landmark of constructive thinking and sound practice. In the two decades since Veiller, many kinds of specific regulation have been developed for particular local needs, and various devices for improving enforcement practice or clarifying administrative responsibility have been tried.

The total picture of housing regulation, however, remains chaotic. Laws or ordinances are developed in one place and slavishly copied in another, where conditions may be wholly different. Requirements for new dwelling construction are generally buried in building codes, where preoccupation with the structural requirements of many other types of buildings results in neglect of fundamental health requirements such as protection of water supplies and sewage disposal, adequate spacing of buildings, reasonable room sizes, or even the requirement of basic heating and sanitary facilities.

In most communities the requirements for existing dwellings (maintenance of repair, permitted occupancy, services required in multiple dwellings, etc.) are both archaic and uncodified. Scattered through many ordinances and codes, they are hopelessly obscure as a basis for enforcement even where their provisions are reasonably in line with modern thinking.

From its earliest days, the committee has been repeatedly approached by local and state health officials and by the national housing and public health agencies for advice or assistance in framing or revising regulatory housing laws and ordinances, in order that these might reflect contemporary health criteria of housing adequacy.

In response to such requests the field of legislative control has been recognized as the third concentration area for the committee's investigative effort, and basic studies addressed to urgent practical problems in this field have been initiated.

It has seemed to the committee desirable to differentiate, in our initial approach, between Building Codes, designed to cover the erection of new structures, and Housing Codes, governing action with regard to rehabilitation or condemnation of existing dwellings. We recognize that some states have "Housing Codes" dealing with both new and old dwelling structures. On a local level, however, this combination rarely exists; and for the present discussion, we shall use the terms as defined above. In this sense, the Building Code normally deals with all structures, including dwellings, and is commonly enforced by a building department. The Housing Code, in the sense in which we have used the term, deals with occupied

dwellings and—in large measure—with conditions of dilapidation and occupancy. Yet the two fields are obviously closely related. In both instances, three different problems are basically involved:

1. What should be the basis, in administrative law, upon which such codes should be established and how specific should they be, that is, how far should authority on detail be delegated to the enforcing agency?
2. What specific body or bodies in a municipality should exercise the power of preparing such codes and enforcing them?
3. What should be the substantive content of such codes?

The subcommittee appointed to deal with this problem, under the leadership of Charles S. Ascher, has made substantial contributions in several brief reports on the first of these questions. In an address on "The Regulation of Housing," delivered at the Inservice Training Course in Housing at Ann Arbor last August, he presented an admirable exposition of the subject and demonstrated his conviction that housing regulation should be accomplished—not by expansion of the general powers of the health department to control nuisances under the common law, and not by invoking the right of eminent domain, but by the adoption of a single uniform code dealing with all aspects of health and safety under the police powers of the community. The substance of Mr. Ascher's article, if presented in more formal terms, would be an excellent report for our committee, and we hope that it may be developed in such fashion during the next few months. It is hoped that the report may point out the extent to which it should be possible to reduce both Building and Housing Codes to relatively simple performance standards, delegating to the enforcing authorities the power to determine the degree to which particular conditions meet such broad performance standards.

The minuteness of the specifications in many present codes is nothing less than fantastic, and works incalculable harm by freezing someone's haphazard judgment of the moment into shackles which may impede sound engineering progress and increase construction costs for decades to come.

A second vital point relating to administrative machinery for enforcement is indirectly answered by Mr. Ascher's subcommittee in the recommendation that the Housing Code be framed by a committee to be set up in a given community to represent various agencies involved in housing supervision. Professor Spencer Parratt, in a valuable recent paper on "Administrative-Legal Methodologies in Elimination of Substandard Housing,"* appears to favor transferring all such powers to a separate housing administration. The health department, however, has certain fundamental day-by-day responsibilities with regard to health which can scarcely be abrogated. It is fundamentally bad administration to have two or more sets of inspectors routinely visiting the same premises for closely allied purposes. It would seem wiser, instead of introducing a sixth new agency in the regulatory field, to suggest a procedure by which the health department, the building department, the fire department, the police department, and the zoning board would coöperate in framing both Building and Housing Codes. Special legislation might be desirable which would permit the issuance of jointly supported Building Codes and Housing Codes, but in any case the existing powers of health departments to draft housing regulations having the force of law should be preserved.

The Building Code might logically be enforced by the building department, which grants permits for all new structures, while the Housing Code might

* *Law and Contemporary Problems: Housing*, School of Law, Duke University, Vol. XII, Winter, 1947, p. 110.

primarly be enforced by the health department (with the building and fire departments coöperating where desirable). In any case our committee should decide on a recommended policy —or alternative policies—and formulate its conclusions with a minimum of delay.

Finally, the third problem—that of the substantive content of a Housing Code—has not as yet been attacked effectively by our committee, although the appraisal procedure and the "minimum tolerable" conditions in our monographs on standards for future housing furnish much of the material needed for such a code.

Action in this field—and prompt action—seems to be of vital importance. It has therefore been decided to appoint a new Subcommittee on Substantive Content of a Housing Code. This subcommittee will be headed by Health Commissioner E. R. Krumbiegel of Milwaukee, and should include representatives of the fields of building inspection and fire protection. Our present Subcommittee on Housing Regulation should attempt to answer question 1 above. Both subcommittees should coöperate in answering question 2. The new subcommittee should deal with question 3.

In regard to questions 1 and 2, our subcommittees might properly deal with both Building and Housing Codes, but in approach to question 3 we believe that we should, first of all, approach the question of the substantive content of the Housing Code. There are three reasons for this order of approach. In the first place, Housing Codes frequently fall within the direct responsibility of our primary client, the health officer, while Building Codes do not. In the second place, Building Codes are fully crystallized in forms which are generally archaic and inadequate but supported by powerful vested interests and traditions, while Housing Codes are either wholly absent or still fluent and can readily be improved. Finally, perhaps the best way to approach the citadel of the Building Code is to establish good Housing Codes and then develop the deficiencies of the Building Codes by demonstration of the inadequacies and unreasonablenesses of their requirements.

IV. *Promotion of Use of the Committee's Findings*

The first three objectives which have been outlined all deal with the development of standards, procedures, and policies which we hope may be applied by others. Without such application, they are merely pious aspirations on paper. Our committee, although primarily a research body, has recognized from the outset both an opportunity and a responsibility for promoting wider understanding and habits of coöperative attack among those agencies and professions whose functions impinge on the public health aspects of housing. Such understanding and attack have been promoted first by the varied composition of the committee, whose membership brings together expert technicians and administrators from a dozen branches of the housing and public health movements, and second by the selection of its projects and the character of its open meetings, at which even wider groups have been convened to coöperate in the committee's program or to review parallel developments from other sources. A considerable list could be adduced of the significant lines of investigation by other groups, or of wholly new kinds of inter-agency coöperation which are directly or indirectly traceable to this conscious emphasis of the committee.

Certain main lines of essential public relations are clearly indicated, as follows:

A. *Promotion of Use of the Appraisal Procedure:*

1. To stimulate official and professional interest in the practical signif-

icance of the appraisal method by obtaining early publication in appropriate journals of the comparative results (graphically presented, with simple text) of three to five of the studies now completed or in process (Milwaukee, Los Angeles, Philadelphia, St. Louis, perhaps Washington or New Haven).

2. To extend the machinery available for local installations of the technique by carrying through with the U. S. Public Health Service contemplated training of housing specialist personnel of its district offices.

3. To interpret accumulating experience with the technique (for the general benefit of users and for needed adaptations to regional or other problems) by maintaining an advisory relation to the U. S. Public Health Service.

4. To promote the use of the technique, internationally, with suitable modification, by rendering consulting service as desired by foreign agencies (a forthcoming Spanish publication of a study at Panama is expected to create demand in Latin America).

5. To encourage inclusion in the 1950 U. S. Housing Census of improved schedule items or tabulation practices developed for this technique, by resumption of coöperative arrangement with the Bureau of the Census, with appropriate test studies of proposed Census material.

6. To adapt the procedures to rural or other special types of housing, by coöperative studies with agencies desiring such adaptation.

B. *Promotion of Acceptance of our Monographs on Standard Housing by:*

1. Complete and prompt publication of our scheduled reports on Occupancy, Construction and Equipment standards.

2. Furthering the acceptance of such standards by the building industry, the real estate groups, groups interested in the financing of housing and various public bodies with responsibilities for housing supervision, through brief and popular summaries for their professional meetings and publications.

3. Promoting consumer demand for proper standards in housing, through non-technical articles in popular magazines of national circulation.

C. *Strengthening and Clarifying Regulatory Housing Procedures by:*

1. Publishing as a committee document the housing regulation subcommittee's findings and recommendations as to administrative provisions in housing control.

2. Publishing, in combination, or in series with the above, a statement of the essential substantive provisions of housing regulation—a statement which will carry to the point of quantitative specifications in so far as possible. The steady flow to committee headquarters of inquiries in this field indicates its growing importance to health departments, and suggests the urgency of committee publication. Release before the end of 1947 of both statements noted above—even though one or both may be provisional—should be considered most desirable.

3. Stimulating adoption of regulations embodying the principles developed, through joint efforts with the U. S. Public Health Service, state health departments, and other means to be explored.

4. Interpreting experience under such regulations, as a basis for future improvement thereof, through subcommittee contacts with adopting localities or states; and publishing from time to time such interpretation and suggested improvements as experience may warrant.

D. *General Relations with the Public Health and Allied Profession:*

If we are to attain the goals in view it seems important:

1. To stimulate the assumption by

American health departments of their full responsibility in broad housing programs, by creation of a subcommittee charged with exploration of this problem. Such a group would presumably consider means of channelling the technical output of the committee to health departments, but would be concerned with other matters also. For instance, what training should be offered in public health schools to provide personnel for the housing functions of health departments?

2. To promote the effective participation of health departments in the housing programs, by using available machinery of the American Public Health Association (Committee on Administrative Practice, Engineering and Health Officers Sectional organizations, *American Journal of Public Health*) as a channel for the procedures developed by the committee.

3. To stimulate the development of housing machinery within the World Health Organization, and through it the development of other national committees on the hygiene of housing; by calling attention to international interest of health agencies in the work and output of our committee, and by other means to be explored.

4. To strengthen interprofessional coöperation in the fields of housing, public health, city planning, and related academic disciplines; by systematic exchange of our publications with leading national and international bodies in these fields and by participation in their professional conferences.

V. *Research*

"Research" is a term not easy to define. Our reports, dating back to the *Basic Principles of Healthful Housing* have all been founded on research, and research not confined to the library but extending to important studies of air conditioning, illumination, and sound control in the field. Our appraisal procedure rests firmly on the basis of exhaustive field research.

It seems likely, however, that fundamental investigation must play a larger part in our future program. The preparation of the monographs on standards has revealed many serious gaps in knowledge which remain to be filled. Below is a list of certain specific topics which have been brought forcibly to our attention.

1. Determination of the most desirable levels of illumination for the performance of various household tasks, to resolve the present difference of opinion between psychologists and illuminating engineers in regard to this problem, presumably in coöperation with the Illuminating Engineering Society and other bodies.

2. A further definition of the noise levels compatible with human health and comfort (to perfect existing standards which have little substantial basis); and a study of the quality and effect of various outdoor noises and of the influence of site planning and natural barriers in reducing such noises.

3. A study of the influence of space allowances and space organization in the dwelling upon household operation, psychological reactions and emotional tensions, perhaps in coöperation with other organizations, including the National Institute of Mental Health.

4. A study of the influence of residential density upon the load on community facilities and the cost of such facilities, in coöperation with housing management and various specialized groups concerned.

5. A laboratory analysis of the basic factors in floor construction affecting safety and fatigue. This would involve the development of instruments for measuring both resistance and resiliency of flooring materials and psychological study of their effects upon the human organism.

6. Development of adequate techniques for the evaluation of the influence of good housing upon physical, emotional, and social health. A careful study of this problem is now being carried on by a special joint committee appointed by the American Public Health Association and the National Association of Housing Officials.

These are only a few of many suggestions which might be made. It seems desirable that the committee, in this field, should undertake:

1. To appoint a special subcommittee on housing research to formulate a series of the more important problems which call for solution, and to suggest the general lines along which such problems might be solved.

2. To foster needed further research in the field of housing standards, by systematic statement of those problems on which present knowledge is inadequate; with special reference to problems within the competence of the U. S. Public Health Service, American Public Health Association, state health departments, schools of public health or other health agencies.

3. To encourage a rational distribution of housing research effort, by exchange of information with other national bodies concerned with housing, public health, planning or other allied research (Social Science Research Council; U. S. Public Health Service; University of Wisconsin Conference on Housing Research; National Association of Housing Officials; technical divisions of National Housing Agency, Federal Public Housing Authority, Federal Housing Administration; National Research Council; Bureau of Standards, etc.; also similar bodies abroad).

4. To prosecute such studies as may be appropriate to the abilities and scale of the committee, by assignment of subcommittees and staff to selected investigations.

It is fully realized that such a program as that outlined will seem Utopian. Yet "a man's reach should exceed his grasp"; and the present progress of the committee's work would have seemed Utopian when the committee was established ten years ago.

We have, first of all, to apply our limited resources to the completion of our two unfinished jobs, the preparation and publication of the standards monographs and the development of official recommendations with regard to the methodology and substantive content of regulatory legislation.

We cannot promote policies we have not clearly formulated and adopted. Yet the formulation of policies is of limited value unless they are applied. If the general lines of activity outlined above seem sound to the committee, additional available funds will automatically determine their practicability. But funds are rarely available without a bold and far-reaching program.

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   - Enforcement and Subsidy in the Control of Slums. L. M. Graves, and Alfred H. Fletcher.
   - An Experiment in Housing Survey and Inspection Procedures for Health Departments. George C. Ruhland.
   - Housing Codes. Morton G. Lloyd.
   - Health Centers and Health Services in Housing Projects. John C. Leukhardt.
   - Heating, Lighting, and Noise Conditions in Recent Housing Projects. Allan A. Twichell.
   - Heating and Ventilation of the Home. C.-E. A. Winslow.
   - New Possibilities in Low-cost Home Construction. Robert L. Davison.
   - Planning for Recreation. Frederick J. Adams.
   - Family Life as the Basis for Home Planning. Svend H. Riemer.
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Committee Membership: 1947

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Control of Dengue in Hawaii

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DENGUE fever appeared in the Territory of Hawaii in July, 1943, for the first time since 1912, and soon after its appearance reached epidemic proportions. Usually when dengue is introduced into a non-immunized community, particularly a community where mosquitoes live and breed all the year around, a majority of the population contracts the disease within a short time. However, only 1,498 cases of dengue occurred during this epidemic in the Territory, out of a population of approximately 500,000 persons. There is, consequently, good cause to believe that the preventive measures taken during this outbreak of dengue may have been responsible for controlling its incidence. All but two of these cases occurred in the city of Honolulu, the population of which is approximately 250,000.

After the epidemic phase, dengue continued to occur sporadically in the Territory. This paper deals with the epidemiological aspects of dengue control in the Territory both during the epidemic period and during the endemic period to date. Most of the dengue control measures have had to do with efforts directed at the elimination of Aedes mosquito, the vector of the disease, which breeds in the Territory throughout the year, although it is believed that efforts to obtain early diagnosis and proper segregation of persons so that mosquitoes could not bite them played a part in the successful control of the disease.

At the onset of the epidemic, the Honolulu Chamber of Commerce and the U. S. Public Health Service contributed funds toward dengue control, and the Army was soon aiding in the control program by assigning considerable personnel and equipment to control work. At the request of the Territorial health department, the Public Health Service immediately flew to Hawaii an entomologist (Dr. Robert L. Usinger) and a sanitary engineer (Wesley E. Gilbertson) from the Atlanta office of its Malaria Control in War Areas unit. In March of 1944, Dr. Usinger reported on the entomological phases of the dengue epidemic in Honolulu [1] and in March of 1945 there was printed in the *American Journal of Public Health* Mr. Gilbertson's report on the sanitary aspects of the control of this epidemic.[2]

EPIDEMIOLOGICAL DATA

The epidemic phase of dengue ran its course largely during the fiscal year beginning July 1, 1943. The first two cases reported to the Board of Health had their onset of symptoms on July 24, 1943. Information concerning the 1,498 cases which developed in Honolulu during that year has been subjected to statistical analysis.

Although during the war years there were several times as many males residing in the Territory as there were females, 58 per cent of the cases of dengue occurred in females, and 42 per cent in males. The higher incidence of breeding of the daytime Aedes mosquito in and about residences compared to the business district may be the factor responsible for the preponderance of cases among females.

A breakdown by age groups shows the disease occurring throughout all groups in a proportion about equal to the age group distribution of the population in the Territory (Figure 1).

Dengue usually has a low mortality rate, and only 3 deaths occurred during the Hawaiian epidemic. However, considerable loss of time from useful occupation is caused by the disease, and had a large proportio ı of the civilian and military population of the Territory been affected by the disease during this epidemic period, the war effort of this military stronghold would have been seriously hampered. The mean duration of the illness, during which individuals were absent from work, was 10.2 days for males and 10.8 days for females.

The symptoms during the Hawaiian epidemic do not seem to have been so severe as have been reported in certain epidemics in other places. Patients generally stated that their aches were worse than those of influenza but did not usually complain of the "breakbone" type of pain which has been recorded elsewhere. A record of symptoms was kept by the public health nurses, who visited all of the persons having the disease during the epidemic period. Three nurses were assigned from the Army Nurse Corps to aid in this work at the height of the epidemic, and the Army also maintained a medical officer on a full-time assignment to aid in the epidemiological aspects of control. Figure 2 shows the percentage of each symptom present among the affected individuals.

All the early cases of dengue were found in the Waikiki section of Honolulu. As soon as it became apparent that the disease had gained a foothold in Honolulu and was spreading, Army and Navy authorities placed the Waikiki area off-limits for military personnel. In spite of preventive measures and the off-limit restrictions, the disease spread throughout the city, although it was confined to a large degree to certain of the more congested areas.

The peak of the epidemic was reached in October, 1943, after which there was a sharp decline for a period of two

FIGURE 1

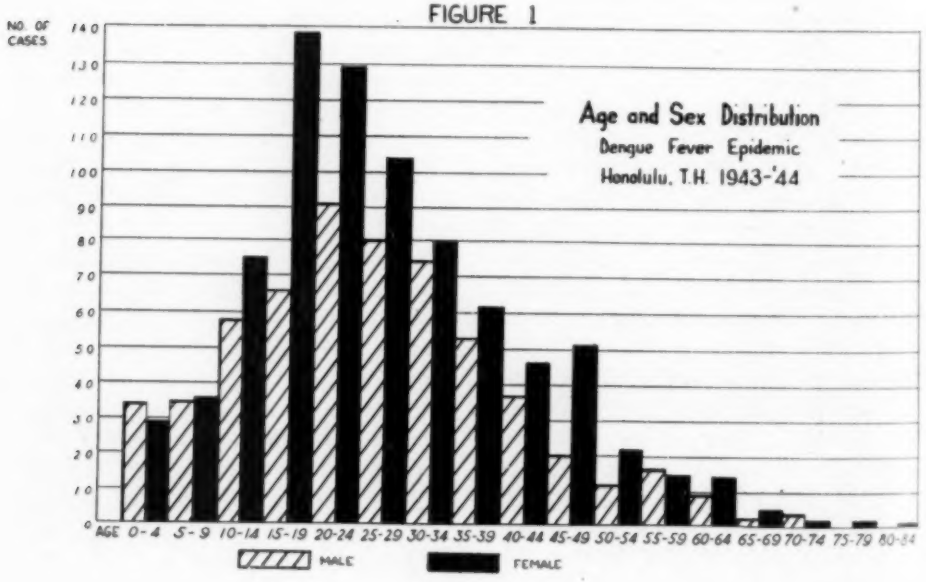


FIGURE 2

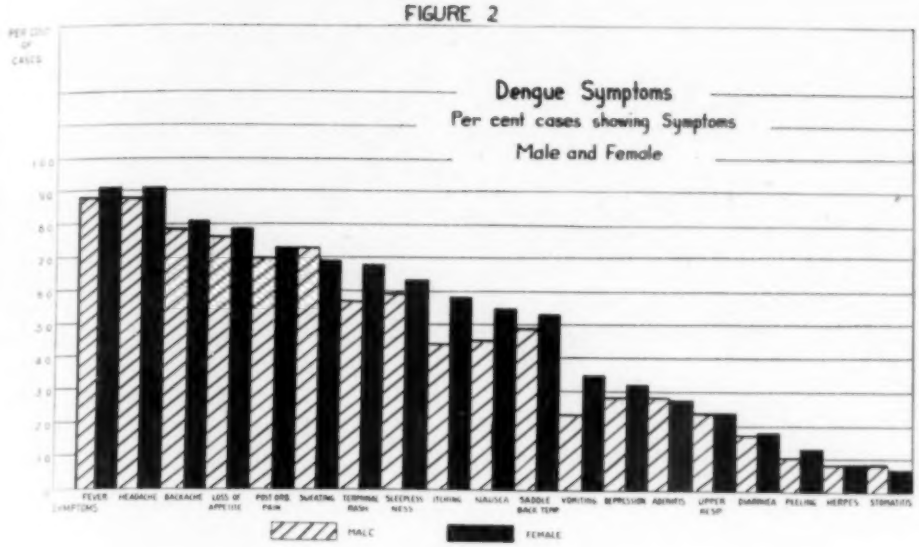
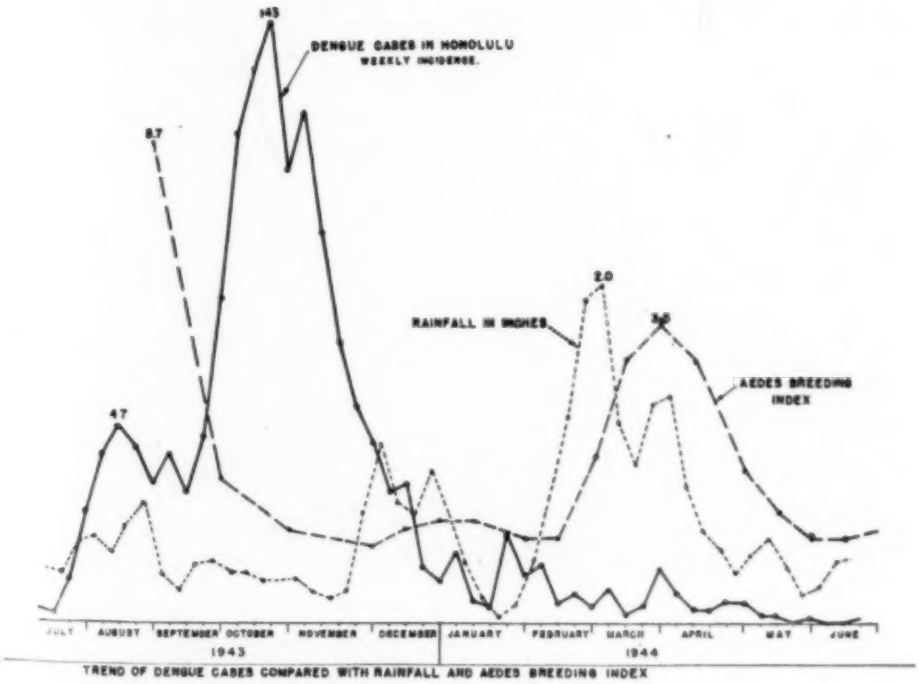


FIGURE 3



TREND OF DENGUE CASES COMPARED WITH RAINFALL AND AEDES BREEDING INDEX

months, followed by a gradual decline throughout the following six months. Dengue has continued to occur sporadically in the Territory since then, although no cases have been reported to the health department since July, 1945.

Figure 3 indicates the weekly incidence of dengue along with the Aedes breeding index and the rainfall in inches during the epidemic period. Table 1 portrays numerically the weekly incidence of the disease during that period.

CONTROL MEASURES

Upon the outbreak of dengue the health department, with the coöperation of the Army authorities, the Navy authorities, the U. S. Public Health Service, the Public Health Committee of the Chamber of Commerce of Honolulu, the Office of Civilian Defense, the government of the City and County of Honolulu, the Department of Public Instruction, and certain other governmental and private agencies, inaugurated a concentrated educational and publicity program to keep the civilian and military population of the Territory well informed as to the possible seriousness of an epidemic of dengue and how to prevent its spread. The control of the Aedes mosquito was stressed, both as to methods of destroying the adult mosquito and of preventing the breeding of this daytime vector.

TABLE 1

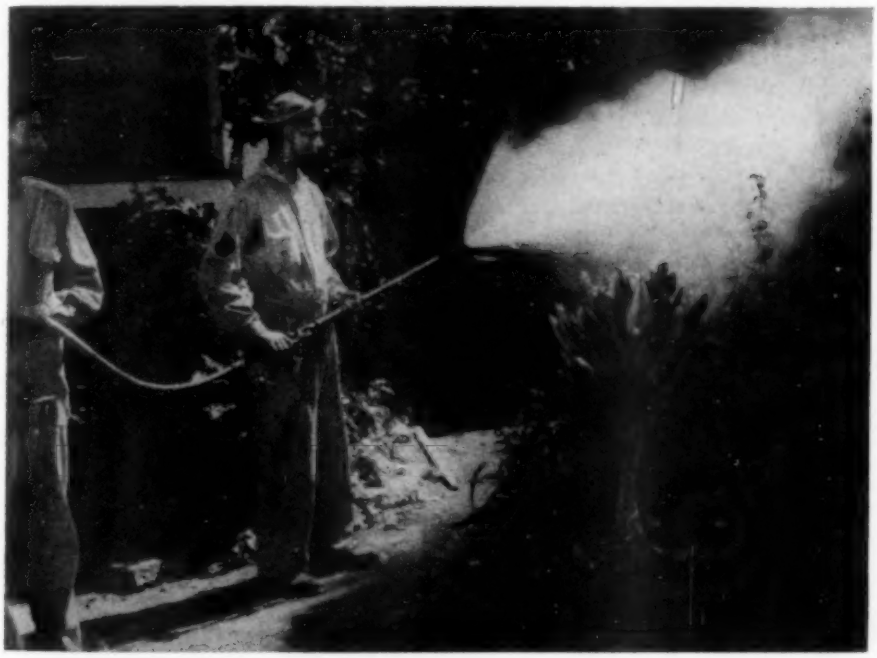
Dengue Cases Occurring in the Territory of Hawaii during the Epidemic from July, 1943, to June, 1944, by Week of Onset

Date of Onset	*No. of Cases*	*Date of Onset*	*No. of Cases*
July, 1943		January, 1944	
no date	3	2– 8	17
18–24	2	9–15	5
25–31	10	16–22	4
		23–29	21
		30–2/5	11
August		February	
1– 7	26	6–12	14
8–14	40	13–19	5
15–21	47	20–26	7
22–28	42	27–3/4	4
29–9/4	33		
September		March	
5–11	40	5–11	8
12–18	31	12–18	2
19–25	44	19–25	4
26–10/2	77	26–4/1	13
October		April	
3– 9	116	2– 8	7
10–16	132	9–15	3
17–23	143	16–22	3
24–30	107	23–29	5
31–11/6	122	30–5/6	5
November		May	
7–13	92	7–13	2
14–20	66	14–20	2
21–27	51	21–27	0
28–12/4	43	28–6/3	1
December		June	
5–11	31	4–10	0
12–18	33	11–17	0
19–25	13	18–24	1
26–1/1	10	25–30	0
Total Number of Cases			1,498

This educational publicity took the form of (1) daily newspaper articles, (2) daily radio news broadcasts, (3) six 75 word spot announcements per day over Honolulu's two radio stations during the first month of the epidemic, (4) radio spot announcements in the Filipino language, (5) distribution of 30,000 multigraphed sheets on mosquito control, (6) a house-to-house educational canvass by the city's OCD wardens to search for mosquito breeding areas and to inform individuals as to mosquito control procedures, (7) special 15 minute radio talks by health department personnel on the subject of dengue, (8) talks by health department staff to various community clubs, (9) quarter-page advertisements on mosquito control in both Honolulu daily newspapers, and (10) publication and distribution of a leaflet in English, Filipino, Chinese, Korean, and Japanese.

The physicians on Oahu were requested by the president of the Board of Health by circular letter, as well as verbally at the regular monthly meeting of the Honolulu County Medical Society, to report suspected cases of dengue immediately upon discovery to the Board of Health.

In each instance, when the communicable disease bureau of the health department was informed of such a case, the bureau arranged to have a public health nurse and a mosquito inspector immediately visit the home of the suspect, look for breeding places inside that home and in the areas surrounding it, destroy such breeding places wherever found, thoroughly spray the home of the suspect with pyrethrum insecticide, spray the homes surrounding that of the patient with insecticide, and instruct the persons in the vicinity as to mosquito control.



Honolulu Advertiser Photo

FIGURE 4—Outdoor spraying with pyrethrum-base spray for adult mosquito destruction. Standard Army Chemical Warfare Sprayer being used; also utilized, with excellent results, were Bean Tommy Gun Sprayers with 1/32" orifice.

The Army loaned the health department a number of mosquito bed nets and, upon the visit of the public health nurse to the home of a suspect, she placed such a bed net over the sick person and instructed him how to use the bed net properly. This net was kept over the patient during the first four days of his illness, which is the period during which a mosquito can obtain the disease organisms from a dengue patient. The public health nurse also filled out the first part of an epidemiological report form, instructed the household in which the patient lived concerning precautionary measures, and helped to see that he obtained satisfactory medical and nursing care.

In the section of Waikiki where the outbreak originated, the following special precautions were taken: (1) the area was placed off-limits to all Army and Navy personnel who did not live or have official business in the area, and civilians were urged to stay out of the area in the daytime unless they had urgent business there; (2) mosquito control inspectors thoroughly searched the area for mosquito breeding places and eradicated those found; (3) with the aid of Army trucks containing high-pressure spraying apparatus, the whole area was clouded with pyrethrum insecticide under the direction of the mosquito control inspectors (Figure 4); (4) inspectors gave individuals in each household a mimeographed sheet of instructions concerning mosquito control, and verbally instructed persons in the household at the time of distributing the sheets; (5) personnel from the Office of Civilian Defense carefully checked all bomb shelters for mosquito breeding, destroyed the breeding places when present and thoroughly sprayed all such shelters with insecticide; (6) the Hawaiian Electric Company, the Mutual Telephone Company, and the Board of Water Supply checked manholes and other installations in this area for mosquito breeding places and stopped such breeding whenever it was found.

The Public Health Committee of the Chamber of Commerce of Honolulu, upon request at the onset of the disease, immediately made available funds to employ 24 additional mosquito control men to work under an employee on their pay roll who had been doing mosquito control work for a number of years and to work directly under the supervision of the bureau of sanitation of the Board of Health. Five soldiers trained in mosquito control were also loaned to the health department to work directly under the bureau of sanitation, and certain Army vehicles were assigned to aid in the control program. The Office of Civilian Defense loaned the health department two trucks for mosquito control work.

At the instigation of the health department, the Hawaiian Airlines agreed to spray thoroughly with insecticide the airplanes leaving Honolulu for other islands. The Army and Navy authorities immediately took action to see that military planes leaving the island of Oahu (on which Honolulu is located) were also sprayed in a like manner.

At the request of the health department the War Shipping Administration asked the masters of all interisland ships to look for mosquito breeding places before the ships left Honolulu and to spray thoroughly with insecticide the living quarters in the ships before the vessels left the port of Honolulu. The Army Transport Service issued similar instructions for its interisland ships and the Navy also took similar precautions.

The Army, Navy, and U. S. Public Health Service continued to emphasize the program which had already been in effect of thoroughly spraying with insecticide each airplane arriving in the Territory of Hawaii before the passengers left the plane, for the purpose of preventing the importation of any fur-

ther disease-bearing mosquitoes into the Territory. These organizations also sent quarantine officers aboard all incoming ships to look for persons with infectious diseases, including dengue. If any such persons were found they were immediately placed under quarantine.

The chief quarantine officer of the Public Health Service in the Territory arranged to have his personnel supervise a search for mosquitoes and mosquito breeding places on all ships leaving Hawaii for the mainland.

At the request of the Army, mosquito inspectors working for the Board of Health accompanied groups of soldiers in searching for mosquito breeding places for ¼ mile radius around each Army post in the city of Honolulu. Besides restricting the Waikiki area, the Army restricted areas of a radius of 800 feet around each case of dengue in the city.

The two U. S. Public Health Service officers, arriving within a week of the reporting of the first case of dengue, were empowered to expend Public Health Service funds, under the appropriation for Malaria Control in War Areas, for hiring additional mosquito control personnel and purchasing additional mosquito control equipment.

To each of the county health officers on islands other than Oahu were sent detailed instructions regarding inauguration of all possible mosquito control measures on those islands, which were immediately put into effect.

A program for the clean-up of dumps, dumping areas, and vacant lots in order to destroy probable mosquito breeding places was inaugurated by the health department.

Since the public schools were about to open, the president of the Board of Health was invited to meet with the Commissioners of Public Instruction to offer suggestions for the school department's participation in the control program. His requests were put into effect by the commission, as follows: (1) Before the opening of the schools careful mosquito control activities were inaugurated in and about the school buildings. (2) Methods of control and spread of dengue were emphasized in classroom teaching when the schools opened. (3) The schools were used as a means of disseminating to the homes information on the prevention of the spread of the disease.

All key persons in the health department intimately concerned with dengue control met twice a week along with Army and Navy representatives to keep each other informed as to the details of what was being done to control the epidemic and to formulate plans for new action.

The engineer of the Public Health Service who was assigned to the health department was placed in charge of the division of mosquito control of the bureau of sanitation. By the middle of September, there were 103 men working in this division, employed by the Chamber of Commerce of Honolulu, the U. S. Army, and the U. S. Public Health Service. Each of the inspectors was provided with a kit, consisting of mirrors and flashlights to find breeding places of larvae, three types of larvicide for control work, educational pamphlets for distribution to householders, and report sheets.

The entire city of Honolulu was divided into 94 control zones, and an inspector was assigned to each zone. They were grouped into cadres of 6 to 11 men each, under 12 foremen. Three district offices were located in the city at the main health building and at the two major health centers of the health department. Inspectional activities were carried out on a cycle of not less than 10 days. A total of 13 vehicles were in use, provided by the health department, the Army, and the Office of Civilian Defense. An in-service training program for the newly employed

inspectors was in continuous operation. One hundred thousand copies of educational pamphlets on mosquito control were printed and distributed by volunteer groups to persons living in the rural areas of Oahu and on the other islands.

By September 13, 1943, acting in accordance with epidemiological and entomological data, the military authorities lifted the restriction on the Waikiki area. By that time, the outbreak had spread to a number of other areas in the city and was definitely on the wane in the Waikiki district.

A second major concentration of dengue cases appeared in a congested part of the city known as the Kakaako District. The first cases were reported from a large laundry located there. Soon so many cases were present that the Army put this district out of bounds to its personnel. By the end of October, when there were still many cases in the Kakaako District, another major focus arose in the congested area near River Street, which was in turn placed out of bounds by the Army for their personnel. This proved to be the last major focus in the Territory, and it never reached the incidence that was attained in the Waikiki and Kakaako areas. By the end of the year Army restrictions had been lifted from all areas.

Only two individuals developed dengue outside of the City and County of Honolulu. These cases occurred on the island of Kauai in December, 1943. The first person to develop this disease was a resident of Kauai who had been visiting in Honolulu and while there had lived in a house where another case of dengue had developed. After returning to his home on Kauai, this man developed typical symptoms of dengue. A period of 14½ days had elapsed from the date of his departure from Honolulu until the onset of his sickness on Kauai. Owing to the conditions under which his disease developed, it can be stated that his incubation period was at least 14½ days, an unusually long incubation period for this disease. Ten days later another man living in the same house on Kauai developed dengue. From the time of the diagnosis of the first case on Kauai all precautions that were being observed in Honolulu were taken in the plantation village where this man lived, including covering the patient with a mosquito net, spraying the interior of the house where the patient lived and the exteriors of all buildings within a 500 foot radius of that house, and frequent inspections to eliminate mosquito breeding. No further cases have been reported from the island of Kauai.

Following the battle of Saipan the 5th Marine Division was sent to the island of Hawaii for a rest period. Upon arrival on Hawaii there were 26 marines ill with dengue. However, all of the individuals had been sick for at least 4 days, so that the period during which they could infect mosquitoes was passed. All individuals were isolated at the Marine Camp in an area remote from civilian population. Inspection of the area revealed no Aedes mosquitoes either of the *albopictus* or *aegypti* variety. No further cases of dengue developed among these marines nor did any cases develop among local inhabitants of the island of Hawaii.

During the early part of 1944 more and more personnel were assigned to the health department for mosquito control activities from the Army and from the U. S. Public Health Service, particularly from the former. The peak in the number of persons working on mosquito control in the Territory occurred in March, 1944, when 398 individuals were working under the health department on this activity. One hundred and ninety-nine of these were assigned to mosquito control activities in the city of Honolulu. With additional personnel the mosquito control program was extended to rural areas on the island

of Oahu and then to the other major islands of Hawaii, Maui, and Kauai. The breeding index of the Aedes mosquito, i.e., the number of premises found breeding this mosquito per hundred premises examined, was 10 per cent in the city of Honolulu at the outbreak of dengue, as determined by the health department's inspectional force. Concentrated efforts directed at mosquito control reduced this breeding index very quickly. By August 31, 1943, the index was 5.7. By September 30 it had dropped to 1.7. It remained a little over or below 1 for the rest of the year following the outbreak of the disease except for March, 1944, which was a particularly wet month, when it showed a rise to 3.5. Reductions in breeding indices on other islands and in rural Oahu were also accomplished by mosquito control activities, but not quite to the remarkable degree of reduction which took place in Honolulu, where nearly all of the cases of dengue occurred and therefore where the major continued concentrated mosquito control activities have been in effect.

Some control activities aimed at reducing the incidence of the night-flying, singing Culex mosquito were incidentally inaugurated under the mosquito control program for fighting dengue. While the Culex does not carry dengue and is not considered a potential spreader of disease in Hawaii, it is a considerable nuisance. Consequently, when Culex were found to be breeding in premises visited, measures were taken to prevent this breeding and householders were instructed as to control methods against this species. The *Culex quinquefasciatus*, the type found in Hawaii, tends to breed in large areas of water, such as polluted ponds, streams, and swamps, and is not therefore a domestic type of mosquito such as the Aedes, which breeds in and around houses in the small quantities of standing water often found in tin cans, bottles, and certain types of plants. In controlling the Culex, swamps and streams have been sprayed with larvicide and stocked with mosquito fish, particularly with Gambusia minnows. Some streams have been cleared and a few swamps drained. Considerable reduction in the breeding index of the Culex mosquito was obtained with a consequent decrease in the number of complaints received by the health department about this nuisance insect.

In spite of the abatement of dengue in epidemic form, a major mosquito control program was continued in the Territory with federal assistance throughout 1944 and 1945. With the cessation of hostilities, a gradual reduction of military personnel working on mosquito control took place until by November, 1945, all soldiers had been removed from this program. The support of the U. S. Public Health Service was continued until the end of May, 1946, when that federal support also was withdrawn from the Territorial mosquito control program. Since that date there has been maintained under Territorial funds a minimal mosquito control program in the cities of Honolulu and Hilo, aimed mainly at the control of the Aedes mosquito, the spreader of dengue fever. This program is effectuated by approximately 30 persons and is maintained as a subdivision under the bureau of sanitation. Inspection units comprise a nucleus of well trained men who, in the event of another serious outbreak of dengue, could train additional workers and direct expanded mosquito control activities. These units can be sent to any part of the Territory where an outbreak of mosquito-borne disease might occur. Pyrethrum and DDT larvicides and adulticides are being widely used. The health department entomologist is doing continued research concerning methods of improving the dispersing of larvicide and of effectively eliminating breeders. Attempts are also being made

TABLE 2

Proven Military and Civilian Cases of Dengue Fever Reported to the Board of Health, Territory of Hawaii, July, 1944, to June, 1946, by Month and Source of Infection

Date		Source of Infection				
		Cases Acquired Within Territory		Cases "Off-Shipping"		
Month	Year	Civilian	Military	Civilian	Military	Total
July	1944	5	4	0	2	11
August	"	4	0	8	12	24
September	"	3	0	1	20	26
October	"	3	1	0	2	6
November	"	0	0	0	1	1
December	"	1	1	0	0	2
January	1945	0	0	0	0	0
February	"	0	0	0	0	0
March	"	1	0	0	0	1
April	"	1	0	0	0	1
May	"	1	0	0	0	1
June	"	9	0	0	0	9
July	"	1	0	0	0	1
August	"	0	0	0	0	0
September	"	0	0	0	0	0
October	"	0	0	0	0	0
November	"	0	0	0	0	0
December	"	0	0	0	0	0
January	1946	0	0	0	0	0
February	"	0	0	0	0	0
March	"	0	0	0	0	0
April	"	0	0	0	0	0
May	"	0	0	0	0	0
June	"	0	0	0	0	0
Total		31	6	9	37	83

to determine the effect of DDT and other larvicides on beneficial insects. Educational work on mosquito control is being continuously promoted, both on the adult level and throughout the school system of the Territory.

Table 2 shows the monthly incidence of dengue cases reported to the health department from July, 1944, to June, 1946. Cases are divided into civilian and military, and into those which were acquired within the Territory and those which were acquired outside the Territory, the latter being officially designated as "off-shipping" cases. The last case was reported in July, 1945.

DISCUSSION

It cannot be said that mosquito control activities and other measures to control dengue which were inaugurated at the onset of the epidemic in the Territory in 1943 and the abatement of the epidemic after only approximately 1,500 cases had occurred were assuredly cause and effect, since we were not dealing with a controlled scientific experiment but rather with an epidemic of a usually rapidly spreading disease among a group of humans in a forward area during a major world war. There is, however, much to indicate that the control measures actually did stop this epidemic in its tracks. In 1943 dengue was introduced into a non-immune population in Hawaii and into an area where there was a high Aedes mosquito breeding index occurring all the year around. Thus, factors were present conducive to the rapid spread of dengue to a great majority of the population in the built-up areas of the Territory. This has been the history of this disease heretofore when newly introduced into a community.

Not only were tried and true methods of mosquito control applied in a concentrated fashion to the city of Hono-

lulu and later to other areas of the Territory, but two new methods never before utilized in controlling widespread dengue in a community were inaugurated; namely, fogging the atmosphere with power sprays of insecticide and the use of a newly discovered and remarkably effective insecticide, DDT.

In peacetime it would be unlikely that health authorities could ever persuade the holders of public purse strings to expend enough funds to employ nearly one individual per 1,000 population for mosquito control in order to prevent the spread of a disease such as dengue. During a war, however, expenditures on a grand scale are the order of the day and a more intensive program to protect the health of a community having a vital part in the furtherance of that war could be put into effect than would normally be true. If a half or even a third of the military and civilian population of the Territory of Hawaii had been stricken with dengue in the summer of 1943, it is quite possible that the war effort in the Pacific would have been seriously hampered. Even in peacetime the expenditure would be economically sound, for the cost of having several hundred thousand persons sick with this disease for an average of 2 weeks per person would be considerably greater than the cost of control measures at $2 to $3 per person per year.

The need for a continued mosquito control program in the Territory is almost self-evident. Without continued education and surveillance concerning the control of the Aedes mosquito, the high prevalence of this insect in the Territory throughout the year would recur and the reintroduction of dengue into the community would in all probability soon result in a rampant spread of the disease into another epidemic.

Should such a situation arise, there is no longer the former large military population or large war fund to which we could turn for aid in controlling the epidemic. There is every reason to believe that with increased incidence and speed of air travel between Hawaii and areas west of here, where dengue is present at all times, persons will be arriving in the Territory from time to time during the incubation period of the disease and developing clinical symptoms here. Although there is maintained a thorough program of spraying airplanes arriving in the Territory from other areas in order to kill all mosquitoes on board, it is still possible that some infected mosquitoes may be brought to Hawaii by airplane. With a low incidence of the mosquito vector of the disease, however, these sporadic arrivals should not cause the disease to become widespread among the inhabitants of our Territory.

SUMMARY

An epidemic of dengue fever started in Hawaii in July, 1943, when the Territory was an important military center of the war. Previously there had been no dengue reported in the Territory since 1912; consequently, no immunity to the disease was present in the population.

Owing to the danger that a widespread incidence of dengue would seriously hamper the war effort, an unusually vigorous attack was made upon the disease by both civilian and military personnel, under the guidance of the Territorial Board of Health. At one time 398 persons were assigned full time to mosquito control activities. One hundred and ninety-nine of these were working in the city of Honolulu. Nearly all mosquito control personnel were soldiers or were employed by the U. S. Public Health Service, although at the beginning of the epidemic emergency funds were used by the Honolulu Chamber of Commerce to hire men for mosquito control work.

During the year-long epidemic, only 1,498 cases of dengue were reported to the health department out of the Territorial population approximating 500,000 civilians and many thousands of military persons. All but two of these cases occurred in Honolulu. The usual history of dengue newly introduced into a community where the Aedes mosquito thrives has been a spread of the disease until 50 to 75 per cent of the population have contracted it.

The Aedes mosquito, carrier of dengue, was attacked by all known methods of mosquito control, including the use of DDT as soon as it became available. In addition, the atmosphere was fogged with insecticide around the homes of dengue patients, using high pressure Army sprayers attached to tank trucks.

An intensive educational campaign accompanied the activities of the mosquito staff and consequent excellent public support in fighting the Aedes mosquito was invaluable in reducing the incidence of the carrier and in thereby checking the spread of the disease.

Within two months control measures brought the Aedes breeding index in Honolulu from 5.7 per hundred premises inspected to a level fluctuating a little over or under 1.0, where it remained as a result of continued control activities.

Sporadic cases of dengue have been reported since the epidemic year, but none have been reported since July, 1945. However, increased speed and frequency of airplane travel between Hawaii and areas to the west where dengue is continuously endemic means an ever-present threat of reintroduction of the disease. Consequently, a continued minimal mosquito control program is being carried on under Territorial funds.

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Sudden Deaths of Infants Allegedly Due to Mechanical Suffocation*

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THE sudden death of an apparently healthy infant occurs with regularity in every large community. The circumstances surrounding the discovery of the body are frequently such that the laity immediately ascribes the death to smothering. Mattress, or bedclothes, or other crib objects found, or thought to have been found, in contact with the face, are incriminated; and if, as rarely happens today, the infant had been put to bed with another person, overlying of the infant by that person is assumed.

In this country during 1934, 834 such deaths were recorded under List 182 (Accidental Mechanical Suffocation) for infants under 1 year. The number of such cases during 1944, was 1,312, representing an increase of approximately 57 per cent during this 10 year period.[1] In the City of New York, the number of such cases has been said[2] to exceed those from measles, scarlet fever, and diphtheria combined, and to equal those from whooping cough. In the *Statistical Bulletin*[3] of the Metropolitan Life Insurance Company, smothering has been called the greatest hazard encountered during infancy. The fact that one-third to one-half of all fatal accidents during infancy are charged to this cause has been the subject of editorial comment by both the *Journal of the American Medical Association*[4a *] and the *New York State Journal of Medicine*.[5]

The Committee on Public Health Relations of the New York Academy of Medicine,[6] through widely publicized releases in both lay and medical press, has recently outlined specific measures for mothers to follow to prevent these so-called "unnecessary" deaths. This particular campaign was launched after Abramson[2] called attention to the excessive number of infants under 1 year of age dying from mechanical suffocation in the City of New York. The feeling of culpable negligence experienced by the mother or other person in attendance, and the resultant hostility of family and friends add considerably to the intensity of these tragedies. Since the conclusion that the infant has died as a result of a preventable accident may have serious implications, it should be accepted only after critical examination of the evidence on which it is based.

What is the evidence upon which the certification of death as due to accidental mechanical suffocation is based? It is

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* Presented before the Maternal and Child Health Section of the American Public Health Association at the Seventy-fourth Annual Meeting in Cleveland, Ohio, November 11, 1946.

* The *Journal of the American Medical Association*[4b] later gave editorial notice to Davison's[11] work, showing that statistics relating to infant suffocation are misleading in that they err on the side of overestimation.

important to realize that at the present time we have no certain post-mortem criteria for the proof of asphyxial death, apart from finding the means of asphyxiation, for example, the rope in strangulation, and its anatomic effects on the neck. Proof of suffocation by such wilful manual force[7] which leaves no distinctive mark upon the body may be quite difficult to establish. Since the anatomic effects are not demonstrable, the conclusion that death resulted in this manner must at least be supported by the exclusion of all other causes of death.

During the past fifteen years, the authors have investigated 167 consecutive infants under 1 year of age, found dead in crib, carriage, or bed while in apparent health; belonging to the group which was ordinarily certified as dead of accidental mechanical suffocation.*

In no instance has our investigation proved accidental mechanical suffocation of a healthy infant by bedclothes or in analogous manner.

Table 1 indicates that this certification rarely occurs after 1 year of age. In 43 (25.7 per cent) of our 167 cases under 1 year of age in which accidental mechanical suffocation was alleged, the autopsy alone established the presence of fatal disease.

The gross findings in these 43 cases which were adequate to establish a natural cause of death, therefore excluding suffocation, were the following:

Mastoiditis and otitis media	20
Bronchopneumonia and otitis media	1
Bronchopneumonia	4
Lobar pneumonia	1
Congenital heart disease	7
Congenital heart disease and bronchopneumonia	1
"Idiopathic" cardiac hypertrophy	2
"Idiopathic" cardiac hypertrophy and bronchopneumonia	1
Subdural hemorrhage	2
Bronchopneumonia and subdural hemorrhage	1
Meningitis	2
Internal hydrocephalus	1

The cases of heart disease were frequently associated with acute respiratory infection.

In the 124 cases showing insufficient gross findings to explain death, comprising 74.3 per cent of our cases under 1 year of age, complete microscopic studies as a rule showed acute inflammation of the respiratory tracts, in association with other significant visceral changes. The lesions encountered have been previously described.[8] They included tonsillitis, laryngotracheitis, bronchitis, bronchiolitis, interstitial pneumonitis, and hemorrhagic bronchopneumonia not grossly detectable. There were lesions frequently in the other organs, including the brain, liver, kidneys, and lymphatic tissues. These lesions were conspicuously absent from the tissues of 31 infants dying of proved violence.*

In all of the 124 cases showing at autopsy insufficient gross findings to ex-

TABLE 1—DEATH RATE IN THE U. S. FOR ACCIDENTAL MECHANICAL SUFFOCATIONS (LIST NO. 182, INTERNATIONAL CLASSIFICATION) FOR THE YEAR 1944

Cause	*All Ages*	*0–1 yr.*	*1–4 yrs*
Accidental mechanical suffocation	1.2	51.1	0.5

* In the City of New York, all deaths occurring suddenly or unexpectedly, or without medical attendance, or in any unusual manner, or charged to violence, actual or alleged, are referred to the Office of the Chief Medical Examiner. During the calendar year 1940 this office investigated 16,158 cases, approximately 20 per cent of the total deaths recorded by the Department of Health. In the Borough of Queens, having a population of over 1½ million, the Medical Examiner's material comprises over two thousand deaths annually.

* These cases included 15 of suffocation (most of them infanticide), 6 of drowning, 2 of crushing injuries, 1 of carbon monoxide poisoning, 5 of burns, 1 of ether anesthesia, and 1 of naphtha poisoning.

plain death, the microscopic study indicated fulminating respiratory disease as the best possible explanation for death, with the following exceptions: three cases in which enterocolitis (one due to salmonella) associated with pneumonitis appeared to be the primary cause of death; 4 cases in which dermatitis was associated with pneumonitis; 1 case in which post-vaccinal encephalitis was the cause of death; 1 case in which, in addition to evidence of respiratory disease, recent immunization may have been a factor in causing death by delayed anaphylatic shock, and 6 cases in which no conclusion as to a cause of death was reached. In the last group no tissues were available for microscopic study.

Furthermore, we have also investigated 67 other infants who had been observed to die suddenly and unexpectedly, under circumstances in which there could be no possible allegation of smothering. It is noteworthy that in these infants, observed to die suddenly and unexpectedly, therefore not allegedly smothered, acute respiratory disease was the usual cause of death. The same cause of death, that is, acute respiratory disease, was the usual one in the cases under present consideration, in whom smothering is ordinarily alleged.

In 38 infants there were sufficient gross anatomic findings to identify the disease causing death, as follows:

Mastoiditis and otitis media	8
"Idiopathic" cardiac hypertrophy and otitis media	1
"Idiopathic" cardiac hypertrophy	4
Congenital heart disease	9
Bronchopneumonia	2
Congenital heart disease and bronchopneumonia	2
Lobar pneumonia	1
Interstitial pneumonitis with bilateral hydrothorax	1
Bilateral adrenal hemorrhage due to meningiococcemia	3
Bilaterial adrenal hemorrhage in which no organisms were recovered	1
Meningitis due to Friedlander's bacillus	1
Meningitis due to pneumococcus type III	1
Meningitis due to pneumococcus untyped	1
Impetigo of new-born	1
Hydronephrosis and pyelonephritis	1
Intraventricular hemorrhage	1

In 29 infants, there were insufficient gross findings to explain death, but completed microscopic study disclosed the same lesions as in the group allegedly smothered and established acute respiratory infection as the primary cause in 22 cases. In two more, this was associated with encephalitis, in one with dermatitis and in two with enterocolitis (one of which was due to *Salmonella enteritidis*). In two other cases no tissues were available for microscopic study and no conclusion was reached as to the cause of death.

The importance of the microscopic examination is too well appreciated by pathologists to require emphasis. It is nevertheless necessary to state that the medicolegal pathologist has even greater need of this essential technique than does his colleague in hospital practice. The latter, by contrast, has the benefit of a full clinical record, frequently containing the results of informative laboratory tests.

It has been our experience that when the microscopic lesions described above occur there is often a history of upper respiratory infection in the deceased infant, or a contact, or both. Not infrequently there is respiratory illness in the entire family at the time of death, or shortly thereafter. Of the 124 infants found dead while in apparent health and showing at autopsy insufficient gross findings to explain death, there was a definite history of symptoms referable to respiratory infection in at least 25, and a questionable history in 6; in 78 cases those in attendance could recall no untoward antecedent signs, and in 16 no reliable information was available.

In 44 cases of this series there was a positive history of contact with one or

TABLE 2—DEATH RATE IN THE U. S. FOR ACCIDENTAL MECHANICAL SUFFOCATIONS (LIST NO. 182, INTERNATIONAL CLASSIFICATION) FOR THE YEAR 1944

Cause	Under 1 mo.	1 mo.	2 mo.	3 mo.	4 mo.	5 mo.	6 mo.	7 mo.	8 mo.	9 mo.	10 mo.	11 mo.	Total Under 1 yr.
Accidental mechanical suffocation	208	279	272	209	122	85	53	33	22	12	9	8	1,312

more persons known to have been suffering with acute respiratory disease. In 3 instances there was a doubtful history of contact, and in 4 cases contact was denied by those in attendance. In the remainder, the records did not show that inquiry was made concerning this point.

The suddenness of death so stuns the family that attempts to obtain a reliable history on the first visit to the scene are frequently unsuccessful. Those in attendance often recall, at a subsequent interview, signs and symtoms in the deceased and the contacts to which no significance was attached at the time.

In 4 cases, the subject was one of twins. The other twin subsequently developed clinical disease. In 2 instances, this was pertussis. We have encountered cases allegedly suffocated in families in which other children at the time had pertussis, or mumps. In such cases, the histological findings were characteristic of these diseases.

Analysis of the age incidence of the deaths under consideration discloses that they occur infrequently during the first month and after the first year. The majority are seen in the first 6 months (Figure 1). The peak in our experience is reached during the third and fourth months. The mortality tables for List

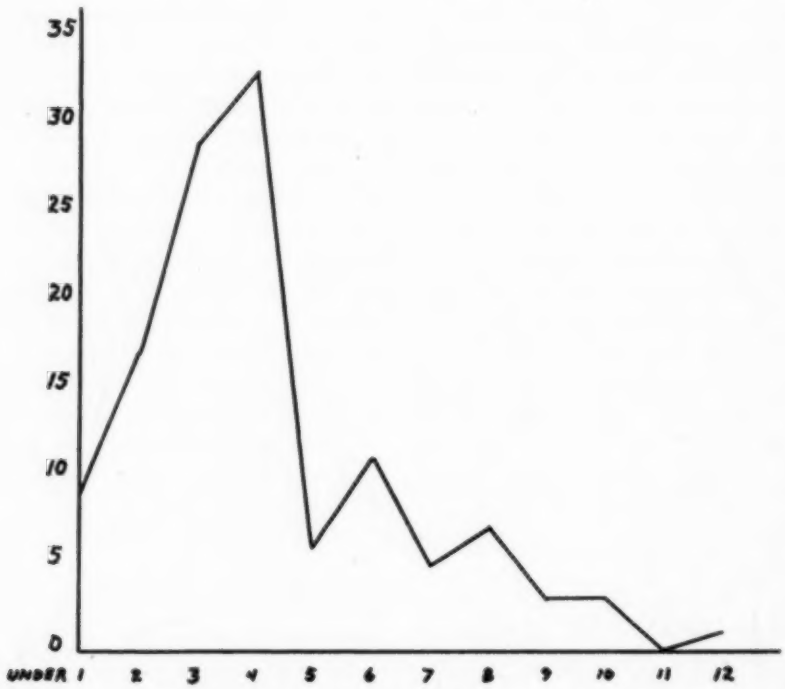

FIGURE 1—Age incidence (by month) of infants dying of alleged mechanical suffocation while in apparent health, showing at autopsy insufficient gross findings to explain death. 124 cases.

182 (Accidental Mechanical Suffocation) (Table 2); the series of 139 cases of "mechanical suffocation" collected by Abramson [2]; and the incidence of deaths due to acute respiratory disease (Lists No. 104–114 inclusive) for New York City during 1942,[9] show a similar age incidence (Figure 2).

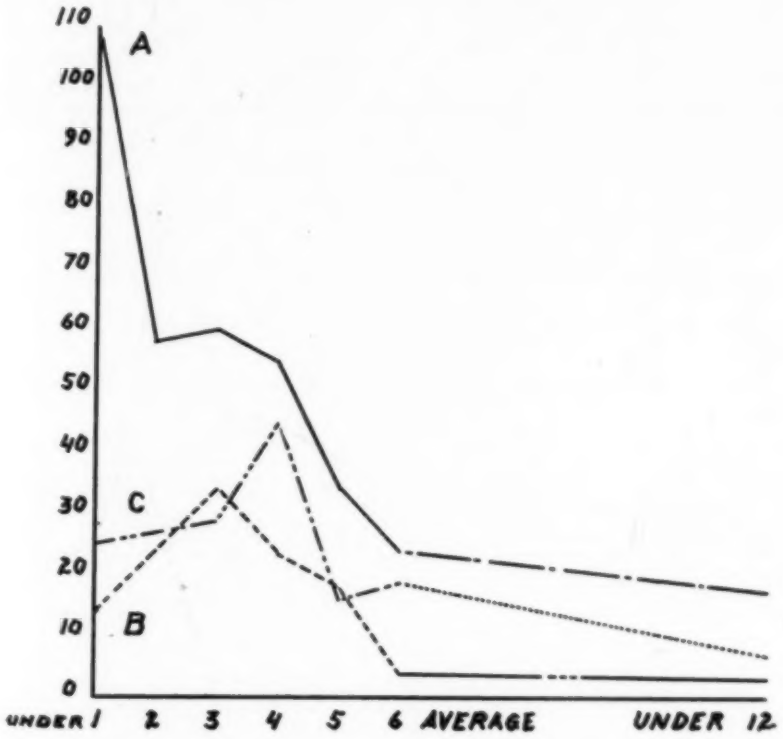

FIGURE 2—Incidence of deaths by month of age in (a) New York City 1942 certified as acute respiratory disease (Lists 104–114): 443 cases. (b) Deaths in New York City 1939–1943 collected by Abramson [2] certified as due to accidental mechanical suffocation: 139 cases. (c) Present study: 167 cases.

The low incidence during the first month of life is paradoxical if one accepts mechanical suffocation as an explanation for these sudden deaths. It is precisely during this period, when the infant is weakest, that a maximum number of such deaths would be expected.

The relative freedom of the first month of life from this cause of death may be explained by assuming (1) that there is less exposure to infection, (2) that the infant is still protected by maternal antibodies. As these wear off and contact increases, infections take their toll. Freund [10] in 1926, and Baumgartner [11] in 1934 showed for rabbits that the formation of antibodies is deficient in very young as compared with adult animals. If antibody production can be taken as a measure of immunity, and if these animal findings are applicable to human beings, an explanation for the observed age incidence may be at hand.

The maximum seasonal incidence in our cases as well as in all those certified as accidental mechanical suffocation is during the winter months. The same

seasonal as well as age incidence will be found for fatalities from known respiratory diseases (Figure 3).

We have so far considered the positive evidence in our own experience for the existence of significant disease as an explanation for sudden unexpected death of apparently healthly infants. We might now inquire into the prevailing attitude of medical examiners and coroners toward this problem. For this purpose, as noted previously, the original records of one of the better organized jurisdictions were examined; they included during one year 44 certifications of infant deaths as accidental mechanical suffocation (Table 3).

Of the 44 cases, 12 were autopsied and 32 were not. Of those autopsied, the brain was described in only 10; the neck organs in 7; the middle ears and mastoids, in none. Microscopic examination was recorded in only one single instance. This was described as "negative." There was no record of such examination in the remaining 43 cases. Thus, not only was there failure to perform autopsies, but failure to

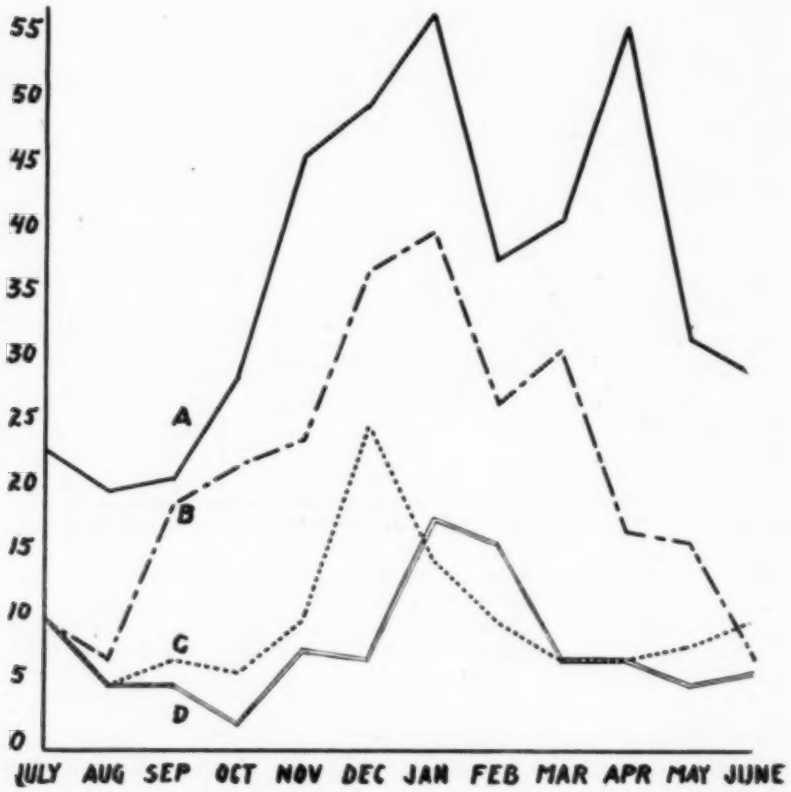

FIGURE 3—Incidence by month of occurrence of (a) New York City 1942 certified as acute respiratory disease (Lists 104–114): 443 cases. (b) Davison's [12] series allegedly dead of suffocation proved by autopsy as dying of acute respiratory disease. (c) Deaths in New York City 1939–1943 collected by Abramson [2] certified as due to accidental mechanical suffocation: 139 cases. (d) Present study: 167 cases.

TABLE 3—44 CASES OF "ACCIDENTAL MECHANICAL SUFFOCATION"—12 AUTOPSIES FROM ANOTHER JURISDICTION 1942

Brains examined: 10 Neck Organs described: 7 Mastoids described: 0

Autopsy findings:

Congenital Heart Disease ("Patent Foramen Ovale")	1
Bronchopneumonia (autopsied after certification)	1
Edema of Larynx ("non-occlusive")	1

Description of scene:

Face down	25
On side	2
"Entangled in bedclothes"	11
Found "choking"	1
Not described	5

Histories:

"Apparent good health"	14
Known to have colds	4
"Sickly"	1
Exposed to bronchitis	1
No information	24

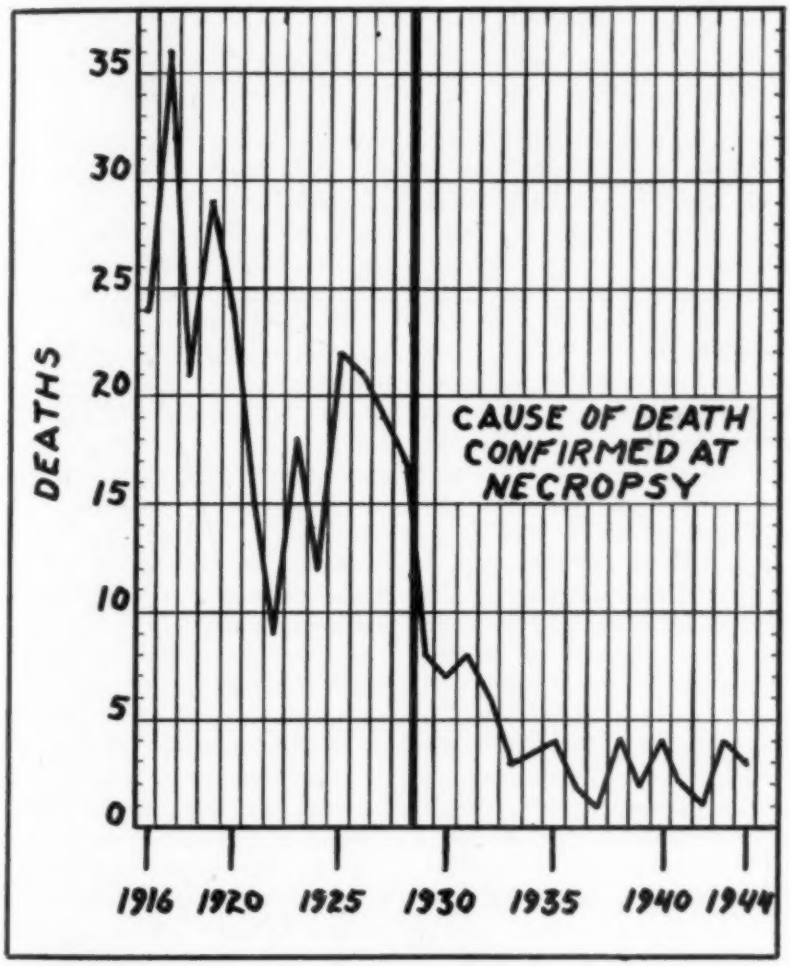

FIGURE 4—Experience of Davison [12] in showing diminished incidence of deaths certified as due to mechanical suffocation, as the result of instituting autopsies in these cases.

TABLE 4—COMPARSION OF MORTALITY TABLES (LISTS 67, 182, AND 200, INTERNATIONAL CLASSIFICATION, FOR THE YEAR 1944, FOR INFANTS UNDER 1 YEAR

	United States	*Texas*	*New York*	*California*
All causes	113,949	7,744	6,950	4,586
Diseases of thymus gland	1,012	45	64	66
Accidental mechanical suffocation	1,263	46	83	49
Ill-defined and unknown	5,510	342	14	12

TABLE 5—COMPARISON OF MORTALITY TABLES FOR LISTS NO. 67, 182, AND 200 IN NEW YORK CITY, UNDER 1 YEAR

International List No. 67 (Diseases of Thymus Gland)
182 (Accidental Mechanical Suffocation)
200 (Cause of Death Not Specified or Ill-defined)

	No. 67	*No. 182*	*No. 200*	*Total*
1937	20	25	16	61
1938	26	28	1	55
1939	15	25	6	46
1940	16	38	3	57

make microscopic studies. Besides these deficiencies, there was another source of error. In 3 cases, the autopsy protocol indicated a different cause of death: laryngotracheitis, or bronchopneumonia, or congenital heart disease. Yet these cases had been certified as accidental mechanical suffocation.

Since in 25.7 per cent of our cases gross autopsy findings immediately excluded death by accidental mechanical suffocation, all such certifications without autopsy may be considered inaccurate. Furthermore, we may consider as unsatisfactory all autopsies in which there was failure to examine the brain, the mostoids, the middle ears, and the neck organs, in addition to the routine dissection of the thoracic and abdominal viscera. We may also disregard all cases that have not had a complete microscopic examination.

The experience of Davison [12] (Figure 4), Coroner of Birmingham, England, is of interest in this regard. From 1918 to 1924, 130 instances, about 21 cases per year, of accidental mechanical suffocation were recorded. From 1938 to 1944, the number of cases dropped to 18, or about 3 per year. Since during the earlier period the population was about 550,000, and during the later period, about one million, the actual drop was from 21 to 1½ per year, in relation to the total population. Davison states that autopsies became routine in these cases only after 1926. The lag in the drop between 1926, when autopsies were instituted, and 1938, when the incidence of this certification became low, can be explained by the interval that may elapse between the realization of the problem, and the acquisition of sufficient pathological experience to find the lesions and assess their significance. We admit that several years elapsed before such diagnoses as accidental mechanical suffocation, and status thymicolymphaticus,* disappeared from our own records.

Tables 4 and 5 show the incidence of these certifications in the country at large, in several states, and in New York City. The extreme variability in the occurrence of List 67 and 182 can only be explained by assuming that the criteria for these diagnoses are most indefinite. By contrast, the incidence of such standard causes of death as lobar pneumonia, for which clinical and

* The best opinion in this regard has been aptly expressed by Holt and McIntosh.[13] "Status lymphaticus is no longer regarded as an explanation of sudden death. It is now recognized that infants and children who die suddenly from any cause exhibit a relative enlargement of the thymus and other lymphoid structures, which is merely an expression of good nutrition."

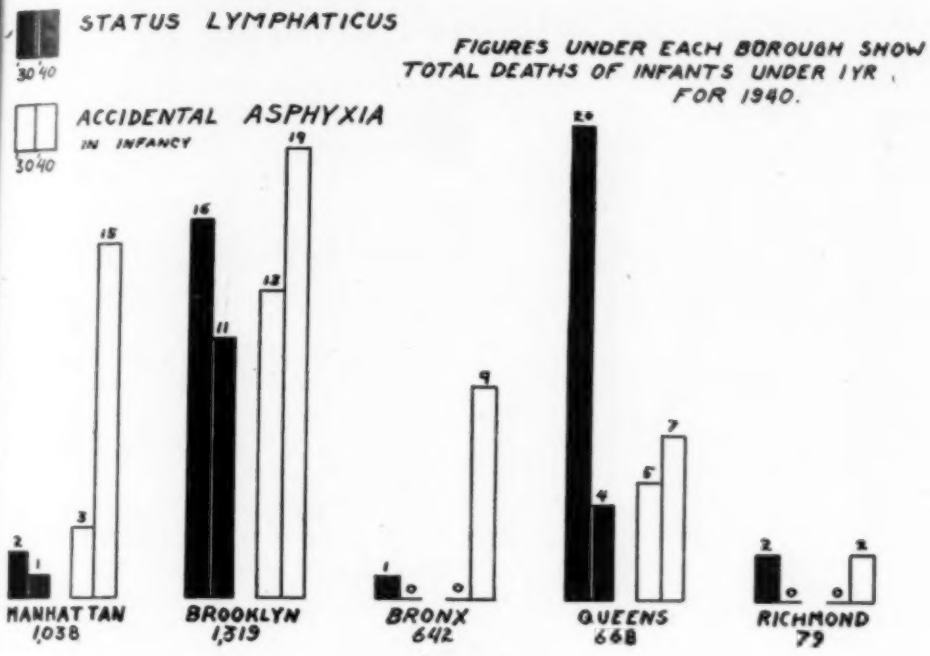

FIGURE 5

pathological evidence is easily obtained, shows no such bizarre characteristics. It is noteworthy that drowning, an accidental cause, maintained a consistent level in the Boroughs of New York City over the years (Figures 5 and 6).

Although the evidence we have assembled indicates that accidental mechanical suffocation is hardly an acceptable explanation for sudden death during infancy, nevertheless such certifications have increased considerably during recent years. An explanation for this increase may be found in our mortality tables under Lists 67 and 200, diseases of the thymus gland (mainly status thymicolymphaticus) and ill-defined or undetermined causes of death respectively. It may be noted that the increase in certifications under List 182 reflects the decrease seen in those under 67 and 200 (Table 5).

We have shown (1) that there is no anatomic evidence for asphyxial death as such,[14] (2) that in the cases allegedly dying of accidental mechanical suffocation, the pathological investigation established another cause of death as a rule. Upon what evidence then are certifications of accidental mechanical suffocation ordinarily made? We be-

TABLE 6—COMPARISON OF CERTIFICATIONS IN NEW YORK CITY (LISTS NOS. 67 AND 182) UNDER 1 YEAR

	Status Lymphaticus		*Accidental Asphyxia*	
	1930	*1940*	*1930*	*1940*
Manhattan	2	1	3	15
Brooklyn	16	11	13	19
Bronx	1	0	0	9
Queens	20	4	5	7
Richmond	2	0	0	2

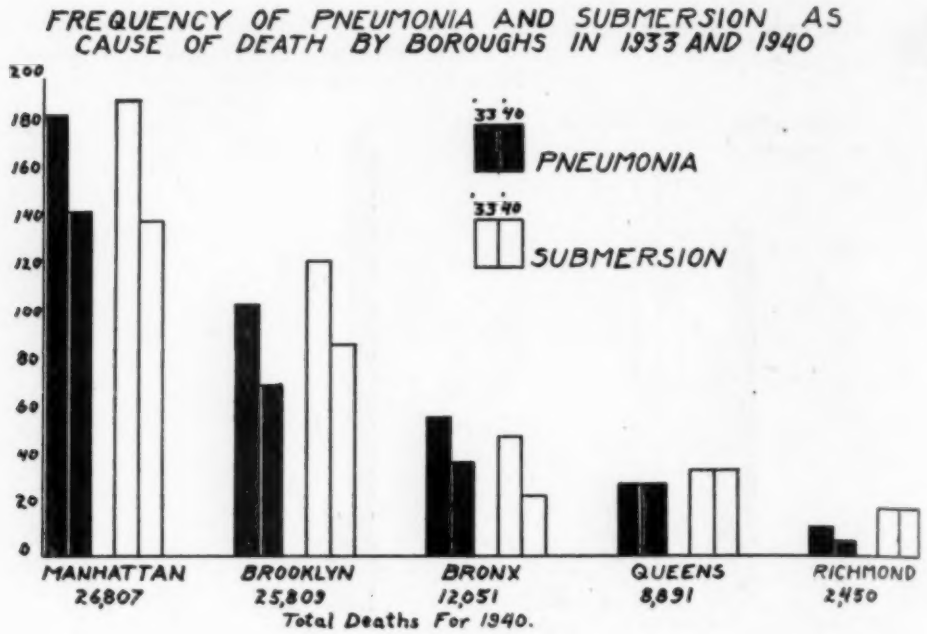

FIGURE 6

lieve that they are based on a misinterpretation by the layman. This misinterpretation receives endorsement from the medical examiner or coroner who stops his investigation at the scene of death. We do not wish to minimize the significance of the visit to the scene. In certain cases this may be the most important element of the medicolegal investigation. However, it is never sufficient in itself, and its value must be measured in terms of the reliability of the information it provides. When an adult is unexpectedly found dead, the body is usually undisturbed before the arrival of the medical examiner or coroner. The same situation does not obtain in the case of infants. When first discovered, though it may be suspected that the infant is in a critical condition or even dead, attempts at resuscitation are usual. In the resultant confusion, the position of the body at death is changed. It can seldom be accurately reconstructed. However, assuming that most of these cases actually are found with face down or face covered, as reported, the mothers usually state that it was the infant's habit to sleep in the prone position. It is common knowledge that infants often prefer this position. Bedclothes or blankets so often described as completely covering the face were never, in our experience, judged to have been so closely applied as to prevent all access of air. We agree with Archibald [15] that the well baby will resist all attempts at suffocation. In experimental animals, attempts at suffocation result in violent struggling. The struggling movement of babies provoked by any impediment to breathing would probably dislodge the amount of bedclothes ordinarily incriminated.

Although important from the medical and public health standpoint, the accurate certification of these deaths possesses another aspect of practical significance. If they are due to suffocation, then Abramson's [2] advice should be followed by mothers; that is, infants

should never be permitted to assume the prone position unless constantly guarded. On firmer ground, in our judgment, rests the suggestion of Adams [16] that by placing the infant in this position, postural drainage of infected secretions from the tracheobronchial tree may lessen the likelihood of pneumonia.

The conception that fulminating infections are responsible for sudden unexpected death is not a new one. Farber [17] cites a case in which Wolbach, at the turn of the century, diagnosed meningitis by microscopic examination in a case previously certified as dying of status thymicolymphaticus. Farber,[17] and Goldbloom and Wiglesworth [18] have described instances of sudden unexpected death during infancy associated with fulminating respiratory infection.

Sudden death is rare in infants and still more rare in adults who are apparently healthy or are suffering from "minor" diseases. When it occurs while the infant is being observed during the fatal collapse, or is found dead with suffocation excluded by the circumstances at the scene, microscopic lesions can almost always be seen, as our series of medicolegal cases shows. These microscopic changes correspond with those found in fulminating diseases, mostly respiratory infections. We found the same type of microscopic lesions in infants allegedly dead of accidental suffocation.*

The significance of such microscopic lesions may be obscured by the presence of advanced gross pathological changes that occur in infants, children, and adults who are hospitalized because they suffer from frank pneumonia, meningitis, or other diseases. The pathologist who studies hospitalized patients usually looks for and usually finds in his material the anatomical changes characteristic for the specific disease. Furthermore, the source of material for the pathological study of sudden death is very limited in hospital pathological laboratories as compared with the source of material of the medicolegal pathologist who investigates sudden death in a large population.

The medical examiner sees far more cases in which sudden death is unassociated with fully developed disease in the conventional sense. Since in many of his cases microscopic changes may be the only features of a fatal disease, attention must be focused upon these microscopic changes if they are to be discovered. An objection that might be raised in this regard is well disposed of by Burke-Gaffney [19]:

> Even microscopic lesions may be the only features accountable for death. It will be said that microscopic lesions will rarely occur without manifesting themselves macroscopically as well. Were this true, their very rarity would in itself be a particular reason for keeping them in mind, but in fact they can and do occur as the sole evidence of morbidity in a surprisingly large number of cases. That they are easily missed is to be explained by the very excellent and somewhat obvious reason that they are microscopic. The presence of such lesions playing an unsuspected but essential part in medicolegal practice I will not endeavor to illustrate by means of examples taken from my own cases . . . .

The histological lesions which we have encountered in the cases under present discussion reflect associated physiological disturbances which may be regarded as the best available explanation for such deaths. There seems to be an apparent discrepancy between the extent of pathological changes and the fatal outcome, in infants found dead while in apparent health. In this connection consideration should be given to the following point: Death in many infectious diseases is preceded by and is probably the result of medical shock. The factors which bring about circulatory collapse or medical shock have not been exactly determined; there is no exact relationship between severity

* In 6 of the earliest cases, as stated previously, sections were not available for study and therefore such cases are classified as of undetermined cause of death.

of clinical or gross anatomical changes in infectious diseases and the probability of shock and death, or recovery. The clinical improvement of a patient just after the crisis of lobar pneumonia is dramatic; but the x-ray examination still shows massive involvement of the lung. It is well known that gross morphological changes do not necessarily reflect the prognosis of a disease. Patients with pneumonia involving both lungs may recover; and others with involvement of one lobe may die. In some who die, only a small patch of consolidation may be demonstrable grossly or, as in the case of the infants under discussion, the involvement may be microscopic.

The susceptibility of infants to trauma is well known. An extent of skin burn or crushing injury from which an adult might easily recover has been repeatedly known to cause death during infancy. Diarrhea may cause death in infants although the clinical course may seem mild and the anatomical findings in the intestines be limited to slight congestion. Kahn [20] found that adult rabbits react vigorously at the site of intracutaneous injection of hemolytic streptococcus but do not die; whereas very young rabbits hardly develop a local inflammatory reaction and die with bacteriemia. This observation confirmed that of Freund [21] who used pneumococci in a similar experiment.

We have found morphological evidence of systemic involvment in apparently mild upper respiratory infections.[22] The "bronchitis" which might easily be weathered by the average adult may in susceptible infants prove to be a fatal system disease.

Under the title of pulmonary congestion, Brouardel [23] in 1896 stressed the importance of "bronchitis" (also known as capillary bronchitis) as a cause of sudden death during infancy:

> Another common cause of sudden death, in children 5 or 6 months old, is bronchitis. Bronchitis is one of the most dangerous diseases to which children are liable; the child cannot cough; it does not know how to expectorate, or how to free itself from the obstruction to its breathing; part of the respiratory area thus becomes useless, and the lesions just described, of atelectatic portions of the lungs, are found post-mortem; it is Laennec's "suffocating catarrh." Bronchitis is probably the explanation of many cases of so-called "overlying"; laryngismus stridulus will account for many more; but still in some, as in the following one, death is simply the result of accidental smothering; the child being placed to sleep in a large bed, and slipping down beneath the bedclothes, or turning face downwards on a large soft pillow.

With all except the last part of this statement of Brouardel,[23] we are in complete agreement. We would prefer to consider his occasional case that "slipped down beneath the bedclothes or turned face downwards on a large soft pillow" as part of an expected percentage in which, by all the means available to competent hands, in the light of existing knowledge, no cause of death may be demonstrable.

Especially in our early cases, we have encountered deaths for which the cause still remains undetermined. Their number has diminished with increasing experience and more extensive pathological study. The proper approach to this problem, however, requires that failure to find a cause of death be readily admitted and honestly recorded; and not concealed under such listing of our mortality tables as accidental mechanical suffocation and status thymiocolymphaticus.

SUMMARY AND CONCLUSIONS

List No. 182, accidental mechanical suffocation (of the *International List of Causes of Death*), is erroneous. There were 1,312 such cases under 1 year of age, certified throughout the United States during 1944, an increase of approximately 57 per cent over the previous decade.

In 167 consecutive cases of infants allegedly suffocated in crib, carriage or bed, 74.3 per cent of whom showed at autopsy insufficient gross findings to explain death, microscopic study revealed fulminating respiratory disease in the great majority of instances. The significance of these findings was further confirmed by their absence in actually healthy infants dying of proved violence and their presence in infants observed to die suddenly and unexpectedly of proved respiratory infection.

Efforts to prevent sudden death of infants should be directed toward diminishing exposure to known sources of infection during this highly vulnerable period of the infant's life; and to the education of parents in the early signs of acute respiratory disease and their significance. It is further suggested that the American Public Health Association appoint a commission consisting of pediatricians, pathologists, and health officers for the comprehensive study of this important problem of sudden death during infancy.

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Appraisal of Nutritional Status

Including Some Recent Observations on Iron and Lactobacillus casei Factor (Vitamin M, Folic Acid) * †

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NUTRITION surveys such as those which have been made in Tennessee [1] and North Carolina [2] have consisted of dietary studies, laboratory assessments of nutritional status, and careful physical examinations for signs of nutritional deficiencies. These surveys were made in part to provide a basis for action by public health administrative bodies. The data from the surveys have not always supported preconceived notions of the problems in the area, and analysis of the data has led to the serious questioning of the validity of some widely employed criteria of deficiencies. A study of the data from surveys and other sources has led to the suggested definitions of various zones of nutriture from clinically manifest deficiency disease to zone of saturation and to the conclusion that the clinical definition of physical normality, i.e., the state of one who is well and not handicapped by some disturbances manifested by symptoms,[3] may be the most useful one for the application to nutrition work.[4]

Epidemiologic approaches to nutritional problems have been most fruitful in the past; as examples one may recall the study of the relationship between iodine deficiency and goiter, fluorine and dental health, diet and beriberi, xerophthalmia and vitamin A, or consumption of corn and pellagra. In all of these now classic studies correlations were obtained between food intake and disease conditions. Similar approaches should continue to be fruitful if health impairments in the population are due to malnutrition. The failure to find correlations between measurements of intake and the evidences of health performances may be taken to indicate that: (1) no relationship exists between the two variants, or (2) a third variant exists which obscures the relationship between these two tested. It has been stated [5] that the third factor thus obscuring some correlations is time, i.e., that lack of correlation is due to changes in dietary habits since the development of the physical stigma. If so, one might reasonably regard such stigmata as scars and, therefore, not manifestations of *currently existing* deficiencies. However, others [4, 2b, d, 6, 7] have felt that the frequently noted lack of correlations between measures of intake and occurrence of physical findings was more likely due to the non-specificity of the clinical findings. There is no doubt that various physical signs of deficiencies may be met with in the general population, but reasoning that the appearance of these

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* Presented at the Joint Meeting of the Food Industries Advisory Committee and the Scientific Advisory Committee of the Nutrition Foundation, Inc., Washington, D. C., April 5, 1946.

† The studies from Vanderbilt University upon which much of this review is based were made possible by grants from the Nutrition Foundation, Inc., the International Health Division of The Rockefeller Foundation, and the Tennessee Department of Public Health.

abnormalities is always due to a simple dietary deficiency and that the incidence of a sign, in absence of supporting data, is a measure of a given dietary deficiency is illogical. The exploration of the reason for lack of expected correlations may be enlightening and provide a sounder basis for the interpretation to public health administrators of the nature of nutritional defects which deserve correction.

These points may be illustrated by the following findings from our surveys and clinic: In a survey in a rural county in North Carolina[2c, d] in 1943–1944 there was found to be no difference in the incidence of corneal vascularization or dilation of the limbic plexus (signs often employed as indicators of riboflavin deficiency), between those groups of persons recording a daily intake of 1.35 mg. or more of riboflavin and those obtaining less than this amount. In the group of 25 white persons exhibiting angular fissures and/or tongue changes resembling those seen in riboflavin deficiency, only 4 individuals failed to present some obvious cause of the lesions other than ariboflavinosis, and but 1 of these 4 had a daily intake of less than 0.7 mg. of riboflavin. It was concluded that ariboflavinosis was not a serious problem in this region. It was noted, however, that certain of the persons with lingual changes and reasonably adequate dietary intakes of riboflavin also had a definite anemia. Furthermore, the glossitis, cheilosis and anemia, but not the corneal invasion, of one of the subjects responded promptly to the administration of iron and riboflavin.[8]

This observation, coupled with the finding of Waldenström,[9] that the oral lesions of Plummer-Vinson syndrome[10] respond to therapy with iron alone, led to a detailed study of patients exhibiting such oral lesions. It has now been demonstrated[8] that angular fissures and superficial glossitis may accompany chronic iron deficiency anemia of mild degree; that subjects with this combination of findings were deficient in iron was proved by use of radioactive iron absorption studies as developed by Dr. P. F. Hahn and his coworkers.[11] Finally, it was demonstrated that in these cases the oral lesions do not respond to vitamin B-complex therapy but that they heal rapidly when the patient is given iron. The lack of response of these lingual changes to therapy with niacin and riboflavin and their subsequent prompt remission after administration of iron is illustrated by the following case report:

M. B., 40 year old colored woman, complained of a sore mouth and tongue and burning of the throat upon swallowing. The symptoms were of 2 months' duration. There had been increased nervousness and easy fatigability for the past year or so. Profuse menstrual bleeding for a 3 week period had occurred 3 years previously and the menstrual periods recently had been 3 weeks apart. History indicated a satisfactory food intake except that meat was eaten infrequently and milk was included only every second day. Examination revealed a tongue with patchy denudation of the papillary tufts, atrophy of the filiform papillae and a glistening surface with some pigmented areas on the left (Figure 1). Except for small uterine fibroids the remainder of the physical examination was non-contributory. Laboratory studies revealed 4.41 million erythrocytes per cu. mm., 10.0 gm. of hemoglobin per 100 ml., and a packed cell volume of 32 per cent. There were 20° of free hydrochloric acid on gastric analysis following histamine stimulation. The symptoms and laboratory findings were unaltered by therapy with 3 mg. riboflavin, 75 mg. niacin, and 9 mg. of thiamine daily for a period of 7 weeks. Therapy was then instituted with ferrous sulfate, 0.3 gm. three times a day. Two weeks later the symptoms of glossitis and the sensitivity of the throat had disappeared and the patient felt less nervous. There was complete regeneration of the lingual papillae and the dorsum of the tongue was covered with the normal papillary tufts (Figure 2). The hemoglobin concentration had risen to 12.0 gm. With continuation of the iron therapy improvement continued, and after 6 weeks of therapy the laboratory findings were: hemoglobin, 12.8 gm.; erythrocyte count, 4.52 million; and packed cell volume, 42 per cent.

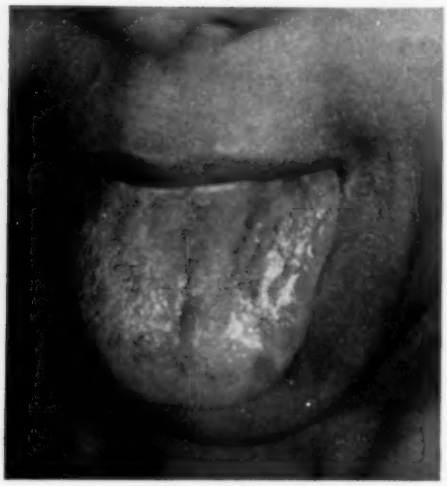

FIGURE 1—Tongue of patient M.B. showing denuded surface, atrophy of filiform papillae and visible pigmentation on the side.

In our clinic patients with these oral lesions are more frequently found to be deficient in iron than in B vitamins. Certainly not all patients deficient in iron exhibit these lesions, and there is no question but that such oral lesions are sometimes signs of B-complex deficiency.

With this background there has been tabulated from three nutrition surveys (two in Tennessee [1a, 12] and one in North Carolina [2d]) the data on incidence of glossitis and/or cheilosis by level of hemoglobin (Table 1). Because of the recognized relationship of adentia and cheilosis [13] the edentulous persons were excluded from the tabulation of the North Carolina data. With full recognition of the small numbers involved in this group, the trend in all of these studies appears to warrant further consideration of iron deficiency as a cause of some of the angular fissures and the glossitis encountered in the surveys of the general population. There are multiple causes of these lesions, one of which is iron deficiency. Obviously, these lesions are nonspecific and the incidence of them alone cannot be used to estimate the incidence of riboflavin deficiency. Likewise, the presence of the lesions could not be used as a sole measure of iron deficiency within a population.

This example serves to illustrate that epidemiological studies of nutritional problems can be of value in understanding the milder manifestations of deficiencies, provided one adopts a tangible criterion and does not attribute absence of correlations merely to recent changes in dietary intakes.

One word should be said regarding the nature of iron deficiency in adults. This deficiency occurs more commonly in women.[14] It is not of dietary origin, but is due to the conditioning effect of excessive blood loss.[14] Large stores of iron cannot be built up in the body by increasing dietary intakes to protect against such emergencies because the intestinal wall absorbs iron only as the element is required,[15] the dietary excess remains unabsorbed. Because of the quantities involved, effective therapy of

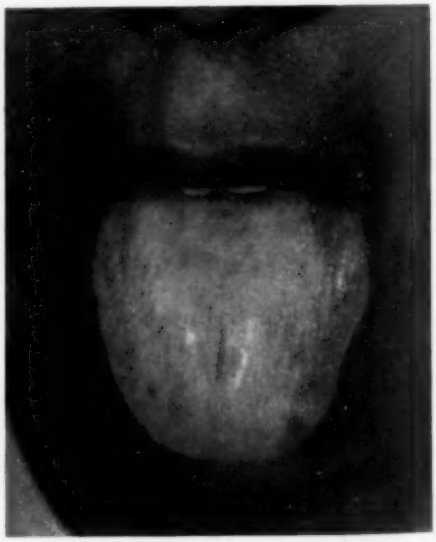

FIGURE 2—Tongue of patient M.B. following therapy with iron. Note complete return of normal epithelium obscuring the pigmentation on the left.

TABLE 1

The Incidence of Cheilosis and/or Glossitis at Various Hemoglobin Levels, Adults

		Males						Females					
	Hemoglobin in Grams/100 ml.	6.5–8.9	9.0–11.9	12.0–13.9	14.0–15.9	16.0–17.9	Total	6.5–8.9	9.0–11.9	12.0–13.9	14.0–15.9	16.0–16.9	Total
Tennessee Survey[1]	Number of subjects with oral signs	..	2	8	16	1	27	1	6	17	3	0	27
	Total number of subjects	..	8	75	141	14	238	1	25	111	26	1	164
	Per cent with oral signs	..	25	10.7	11.3	7.2	11.3	100	25	15.3	11.5	0	16.4
North Carolina[2]	Number of subjects with oral signs	1	0	2	0	0	3	0	2	2	0	..	4
	Total number of subjects	1	1	35	115	7	159	7	38	147	27	..	219
	Per cent with oral signs	100	0	5.7	0	0	1.9	0	5.3	1.4	0	..	1.8

[1] Wilson County and Crossville Surveys, 1939–1941. White and colored population 16 years of age and older. Data made available through the courtesy of Dr. John B. Youmans.

[2] Alamance County, North Carolina, 1943–1944.[9d] White population only, 15 years of age and older. Edentulous subjects excluded.

iron deficiency requires therapeutic doses of iron, not merely iron-rich diets.[14, 16] The problem, then, is one of education of physicians and of women as to when iron deficiency should be suspected. The solution of the problem is not by increasing generally the iron intakes of the healthy members of the population.

In collaboration with Dr. P. F. Hahn and others[17] we have extended our study of iron to an investigation of groups of school children in Nashville, Tenn. In two areas representing the two extremes of the economic scale we have employed for the first time on a mass scale the radioactive iron absorption technic. The findings indicate that iron was not a limiting factor in the hemoglobin levels of these groups of school children age 7–10 years. The mean hemoglobin levels of the children were approximately 13.0 gm. per 100 ml. and the calculated total daily intakes of iron averaged about 11.0 mg., an intake which has been found to be satisfactory by other investigators.[18] This mean hemoglobin level may be considered satisfactory since it is similar to that observed for healthy children in many other sections of the world,[2f, 25] some of whom were known to be abundantly nourished.[25b] It seems that the arbitrary choice of levels of from 10 to 14 gm. as anemia levels for young children indicative of iron deficiency[19] is not justified. Certainly, hemoglobin levels of 13.5 gm. in children cannot be taken to indicate dietary inadequacy of iron as has sometimes been assumed.[20]

Another recent discovery which may influence the interpretation of nutrition surveys is the demonstration[21] that the deficiency disease, sprue, is relieved by a newly synthesized vitamin variously designated as vitamin M, *Lactobacillus casei* factor, "folic acid," vitamin B_c, etc. Sprue is a disease characterized by diarrhea with increased fat content of the stools, glossitis, macrocytic anemia, moderate leukopenia, pigmentation of the skin, impairment of gastrointestinal absorption as indicated by a flat oral glucose tolerance curve, a flat vitamin A tolerance curve, a very low serum carotene, a characteristic gastrointestinal pattern on x-ray examination, and striking loss of body weight. Bone marrow studies reveal a maturation arrest in

the megaloblastic phase—a finding similar to that seen in pernicious anemia, nutritional macrocytic anemia, tropical macrocytic anemia, macrocytic anemia of pregnancy, and some other syndromes. The disease is more common in tropical regions, but it occurs endemically in the United States, cases having been reported from many sections of the country. It has long been considered that the disease in non-tropical and in tropical areas is identical and, hence, the entity should not be classified as "tropical" and "non-tropical."[22]

Because of the similarity of the clinical picture of sprue in man and vitamin M deficiency in the monkey, the demonstration by Day and his coworkers[23] that a purified preparation of *L. casei* factor exhibited vitamin M activity for the monkey, led us to postulate that this vitamin might be efficacious in sprue. In November, 1945, we reported the response of the first cases of sprue to the new synthetic vitamin.* [21a] This finding was rapidly confirmed and extended.[21b, c, d] We have treated 4 cases of the disease to date and all have shown unmistakable clinical and hematologic response to the synthetic vitamin in doses of 15 to 20 mg. daily. The symptoms of glossitis have disappeared within 3 or 4 days and a rapid regeneration of the lingual papillae has occurred; simultaneously there has been an improved general sense of well-being: the diarrhea has subsided; the appetite has increased to the point of becoming insatiable; and impressive weight gains have followed. One man gained 43 lbs. in 3 months, one woman gained 22½ lbs. within 29 days.

The prompt hematologic response which occurs has been depicted in detail in a previous report.[21b] Increases in all of the formed elements in the blood have been seen and the bone marrow rapidly loses its primitive character. The platelets have risen from pre-treatment levels of 200,000 or so to post-treatment peaks of 2 to 4 million per cu. mm.

The studies in these patients indicate that this vitamin is concerned with maintaining the normal absorption of the gastrointestinal tract. We noted a return toward normal of the glucose tolerance curves of our patients within a few days after *L. casei* factor was given.[21b] The prompt cessation of the diarrhea, the remarkable weight gains, and the later occurring rise in serum carotene and change in vitamin A tolerance curve[24] all speak for improvement in gastrointestinal absorption by this factor. The effect on appetite is so striking that it is difficult to believe other than that it is a specific result of the therapy. Finally, there is in some cases a decrease in the fecal fat loss expressed in per cent of dry weight of the feces, but a more dramatic decrease in total fat loss due to the decreased quantity of stool. Repeated x-ray examinations of the gastrointestinal tract have not yet permitted a definite conclusion as to the ultimate effect of the vitamin on the "deficiency pattern" which is observed in sprue.

These results indicate that all of the cardinal manifestations of sprue which ordinarily respond to liver extracts respond to this vitamin. That this is but one of a number of active factors in the vitamin M-complex may be surmised from existing evidence. Although the exact pathogenesis of sprue is not clear, it is obvious that at least one number of the vitamin M group, i.e., *L. casei* factor, corrects a deficiency which may exist in man, and it can be assumed that members of this group of substances are required by the human being.

Many questions arise as a result of these studies: Which members of the vitamin group chemically related to *L. casei* factor are effective in man? Is

* The synthetic *L. casei* factor employed in our studies was kindly supplied by Dr. Stanton M. Hardy, Medical Director, the Lederle Laboratories, Inc.

sprue a simple *dietary* deficiency? What is the human requirement of *L. casei* factor? Do there exist various degrees of vitamin M deficiency within the population? How does this discovery affect our interpretation of the oral manifestations of deficiency states, of the hematologic findings from nutritional surveys, of the gastrointestinal symptoms and findings which are frequently recorded in nutrition surveys? What is the importance of dietary *L. casei* factor as contrasted to that synthesized by the intestinal flora? Will studies with this new vitamin clarify our understanding of the relationship of sprue, pernicious anemia, nutritional macrocytic anemia, macrocytic anemia of pregnancy, and perhaps pellagra? What precautions should be taken in food processing to avoid destruction of this vitamin? Answers to these questions cannot be provided at this time. It is to be hoped that critical tests will be made of the points raised regarding this vitamin before our enthusiasm for the importance of the dietary supply of this latest factor to be added to those food essentials for man gets ahead of our positive knowledge.

CONCLUSION

In conclusion, it is hoped that this discussion has illustrated: (1) that the maintenance of a critical view toward epidemiologic studies in nutrition can, if properly followed, lead to a better understanding of the existing problems in the population, (2) that continued restudy of survey data and revision of our interpretation of such data are necessary in order that we follow sound nutrition practice in designing our public health programs.

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Are Frozen Foods a Public Health Problem?*

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AS we become better acquainted with the history of peoples of frigid areas, we learn that food preservation by freezing has been practised perhaps for thousands of years through natural climatic action. Creating refrigeration by artificial means in warmer climates, however, is a comparatively recent development.

Starting with Dr. William Cullen in Scotland in 1820, who invented a sulfuric acid refrigerating apparatus for cooling biologicals, advances in mechanical refrigeration were slow. Salt and ice freezing mixtures were satisfactory only for local uses. Linde in Germany, in the middle 1800's made the first practical contribution with the introduction of the expanded air machine. Milwaukee became the center of the beer industry largely because Vilter made his ammonia refrigerating machines there. Fish was frozen commercially with mechanical refrigeration, using ammonia in 1891 at Sandusky, Ohio. Although this was the first commercial venture using mechanical refrigeration, it was preceded by ice and salt freezing of fish in 1861, poultry in 1865, and meats in 1880. Frozen fruits were introduced in 1905, vegetables in 1930, precooked entrees in 1942, and bakery products about a year later.

* Presented before the Food and Nutrition Section of the American Public Health Association, at the Seventy-fourth Annual Meeting in Cleveland, Ohio, November 14, 1946.

THE FLORA OF FROZEN FOODS

Sanderson and Fitzgerald [1] presented a paper at the Third International Congress of Microbiology in 1939, "The Bacteriological Flora During Spoilage of Frozen Vegetables," which was never published in full. The facts are herewith presented because this information should receive wider notice and because no similar studies of this nature have since appeared. They confirmed the work of others that the usual flora of frozen vegetables consisted of members of the genera: *Achromobacter, Aerobacter, Bacillus, Chromobacterium, Flavobacterium, Lactobacillus, Micrococcus, Phytomonas, Pseudomonas, Sarcina and Serratia.* The above organisms had usually been isolated from frozen or freshly defrosted and not from spoiled frozen foods. The study of the latter presents quite a different picture.

Prescott and Geer [2] had suggested inoculating frozen foods with an acid-forming organism as a safety factor to produce acid and thus spoil the product through souring before the toxigenic types could produce an enterotoxin. Berry (1933) [3] had discovered that after seven days at room temperature, frozen peas yielded Lactobacilli as the predominant organism.

In the Sanderson-Fitzgerald study, spoilage at 10, 21, and 32° C. was investigated. Ten gram samples were taken and all were incubated at 25° C. for 72 hours. The earlier stages of de-

composition disclosed an unexpected rise in pH in which the decomposition products had a somewhat sulfuretted (H_2S) quality. However, at 21° and 32° C., a sudden drop in pH usually occurred during spoilage in 11 to 13 hours.

In the soured products, only Flavobacterium and Micrococcus predominated repeatedly. Yet experience indicated that neither of these types was capable of producing acid in such quantities or so rapidly as was occurring in the samples of corn, peas, and spinach being investigated. It was quite evident that the Bacto-nutrient agar being used was not a satisfactory medium for such a study.

With the thought that streptococci might be implicated, a streptococcus medium of Pablum infusion agar was tried. Immediately, counts increased tenfold. Using special streptococcus media, streptococci were consistently found to be the cause of souring asparagus, peas, wax and green beans, and corn which had been frozen in factories located in widely scattered parts of the United States. The remainder of the investigation consisted of an attempt to identify the causative organism. Dr. C. P. Hegarty of Oregon State College and Dr. B. E. Proctor of Massachusetts Institute of Technology coöperated in the identification studies.

The consensus was that one and possibly two strains of *Streptococcus faecalis* were responsible. Moreover, an attempt to discover the source led to the fact that the same organism could be removed aseptically from within the seed coats of peas and kernels of corn. Thus, the apparent connection between the acid producing organism described and the Enterococci is difficult to explain.

The rapid souring of frozen vegetables may be nature's way of protecting the frozen-foods-eating public. It is hoped that similar work will be undertaken by others because of uncertainty with respect to the causative organism. For the purpose of assisting others to continue this work, Chart 1 is presented to show the biochemical differentiation of two strains of an organism presumed to be *Streptococcus faecalis* as determined in the above mentioned investigation. It should be noted that several of the streptococcus strains isolated differed in certain characteristics. The majority of the cultures failed to ferment lactose even after 2 weeks' incubation. One group failed to grow at 10° C.

In summarizing the work reported, it is evident that the bacteriological flora of frozen foods is very extensive, but of great significance is the apparent presence of certain very active acid producing types so that toxigenic or pathogenic types may be entirely inhibited during the spoilage process. This presumption remains to be unequivocally proved. As yet, therefore, one cannot avoid consideration of the implications of *Clostridium botulinum*,

CHART 1

BIOCHEMICAL DIFFERENTIATION OF TWO STRAINS OF *Streptococcus fecalis*

	Hemolysis	Growth at 10° C.	Growth at 45° C.	Growth in Presence of 6.5% NaCl	Growth in Presence of pH 9.6	Growth in Presence of 0.1% Meth. Blue	Growth in Presence of Strong Reduction	Survival 60° C.; 30 min.	NH_3 from Peptone	Starch Hydrolyzed	Gelatin Liquefied	Acid Produced from Glucose	Acid Produced from Sucrose	Acid Produced from Lactose	Acid Produced from Maltose	Acid Produced from Trehalose	Acid Produced from Mannitol	Acid Produced from Inulin	Acid Produced from Sorbitol	Acid Produced from Salicin
Gr. 1	−	−	+	+	+	+	+	+	+	−	−	+	+	±†	+	+	+	−	+	+
Gr. 2	−	+	+	+	+	+	+	+	+	−	−	+	+	−*	+	+	+	−	+	+

* Weak acid production after two weeks.
† Of fifteen cultures, only three have shown acid production at two weeks.

Staphylococcus aureus, the Enterococci and Salmonella and other pathogenic types which may contaminate frozen foods.

EPIDEMIOLOGY OF FROZEN FOODS

From the start, public health minded food technologists worried about the implications of botulism, Staphylococcus food poisoning, and pathogenic manifestations resulting from the unregulated production and use of frozen foods. As yet, such fears have not materialized in spite of the fact that one or another of these foods has been marketed commercially in ever-increasing amounts from sources in every section of the country for many years.

Large-scale output of frozen meats, in effect, dates from the publication in 1898 of a report [4] by the British Society of Public Analysts giving that product a good nutritional rating. The meat industry has been very careful in freezing meat, and consequently it has caused no health problems either in the United States or abroad.

Despite rather extensive shipments of frozen fish, only one reference has been found on sickness caused specifically by this product. Unfrozen shellfish have long been recognized as potential health hazards.

Epidemiology of frozen desserts has received much study. Without doubt, the control experience gained by investigators in this field will be of great significance in establishing sanitary measures for the newer phases of the frozen food industry, particularly frozen precooked products. It is significant that the American Public Health Association has taken the lead in proposing tentative methods [5] for the microbiological examination of frozen foods.

Frozen strawberries have been marketed for soda fountain purposes since 1905. It was early found that their high acidity was responsible for the sterilizing action which occurs during long-term freezing storage.

Frozen vegetables, however, have been generally regarded as potential public health hazards because of their practically neutral state. As a result, several serious studies were made during the early '30's.

Prescott and Geer [2] dispelled fear of botulism from frozen vegetables in work which was published in 1936. Their studies, as well as those of Meyer, Tanner, James, and others, indicated that spores of *Clostridium botulinum* resisted freezing, but no toxin was produced at refrigerator temperatures after defrosting for several days, and that there was little or no danger of botulism from frozen foods which were properly handled. However, they have implied that when improperly handled either in plant or kitchen, frozen vegetables may cause trouble.

Jones and Lockhead,[6] Dack,[7] and others who have studied Staphylococcus food poisoning extensively imply that frozen cooked foods and bakery products might contain public health hazards based on the epidemiology of their unfrozen counterparts. While many investigators now may be investigating such possibilities, the literature contains hardly a case of authenticated food poisoning directly caused by bacterially contaminated frozen foods prepared commercially for sale to the retail and institutional trades. Despite this, evidence may be accumulating to change the situation. It is important, therefore, to study the bacteriological picture thus far presented in the literature.

BOTULISM INVESTIGATIONS

Dack [7] says that botulism is a disease due to an enterotoxin formed by the growth of botulinum microörganisms which, after the symptoms appear, has produced physical damage often resistant to specific antitoxin therapy.

In the early days of the canning in-

dustry botulism was a serious obstacle to the growth of the industry. One laboratory has spent 26 years on this project which is not yet finished. Accordingly, there is no longer any fear of botulism from foods *commercially* canned in tin or glass because of safety factors used. Nevertheless only during the recent world war was the botulinum enterotoxin isolated and identified. Being a protein, giving the usual protein reactions, its identification has not yet proved of specific practical value.

Although *commercially* canned foods are no longer implicated in botulism outbreaks, home canned foods are continually causing sickness and death even though federal and state governments have spent millions in educating the public about home canning methods. It may be that conversion from home canning to home freezing may automatically eliminate botulism as a grave public health hazard.

The previously described work of Prescott and Geer,[2] Tanner,[8] Meyer, and others has given experienced investigators confidence that frozen foods do not present any more serious botulinum, food poisoning problems than do fresh foods. Dr. K. F. Meyer probably expressed the group thinking in this recent statement to the writer: "My epidemiological experience with frozen foods indicates that frozen fruits and vegetables do not constitute a health hazard in so far as botulism is concerned."

STAPHYLOCOCCUS FOOD POISONING INVESTIGATIONS

Work with human beings and animals shows that various subjects, and even the same subject at different times, react differently to the same dose of the enterotoxin. Accordingly, the only sound evidence that frozen foods can be the source of Staphylococcus food poisoning would be actual epidemics unequivocally proved to be caused by such foods.

Jones and Lockhead[6] found that of fifty strains of Micrococci isolated from frozen vegetables, twelve were able to produce an enterotoxic substance. They also found that of eighteen strains of Staphylococci capable of elaborating enterotoxic substance in pure culture in semi-solid starch medium, only eight were able to produce this in frozen corn defrosted 24 hours at room temperature (20° C.); but these eight were unable to produce enterotoxin in a refrigerator at 4.4° to 10° C., where no multiplication of Staphylococci was observed. Segalove and Dack[9] conducted temperature incubation studies and found that below 4.0° C. (40.1° F.) the toxin was not formed after 4 weeks' incubation. Monkeys were used in these tests.

McCastline, Thompson, and Isaacs[10] describe an outbreak of Staphylococcus food poisoning due to ice cream custard. Tanner[8] describes an outbreak which was traced to frozen fish. Rumors of outbreaks in Army and Navy camps from frozen eggs and other products are not well authenticated.

Considerable additional evidence is needed to support a case for or against Staphylococcus food poisoning from frozen foods. The first attempt to get down to fundamentals is the proposal of a committee, composed of leaders of various types of food trade organizations, to set up a fund with which to conduct basic studies in Staphylococcus food poisoning. Even though frozen foods are not definitely major offenders, the frozen food industry has every reason to coöperate in such studies to the fullest extent.

Frozen precooked foods such as chicken a la king may potentially be sources of Staphylococcus food poisoning. One can easily visualize the contamination which may take place in hand-picking poultry meat from cooked chicken. One can also visualize the difficulty of sterilizing such meat without re-cooking. A person having a boil or other festered sore, or a cold or other

similar infection, might cause the contamination, since toxigenic Staphylococci may be present. When such highly contaminated meat is combined with starch, milk, or egg-thickened cream sauce and frozen it is quite impossible to avoid the resulting bacteriological contamination no matter how careful, clean, or well regulated the operation may be otherwise. Spoilage of such a product at room temperature would probably be necessary to cause sickness, however, because Lockhead and Jones [6] indicated the toxin cannot be elaborated while the food is refrigerated.

Our knowledge of the Staphylococcus enterotoxin indicates that it is heat-stable, and will withstand boiling for 10 minutes. If present in a product it is certain to cause trouble. Fortunately, it is not so fatal a toxin as that which causes botulism, but it is serious enough to warrant the costly research which its study, control, and prevention will require.

The fact that frozen precooked entrées and baked goods are usually reheated before serving presents an excellent opportunity to sterilize these products. Gilcreas and Coleman [11] determined that Staphylococci in custard filling are rendered non-viable in 15 minutes at 430° F., and in 20 minutes at 420° F. It is estimated that such treatment should free the material of toxigenic organisms.

Cathcart and Merz [12] discovered that the presence of chocolate and cocoa inhibited enterotoxin production in the absence of eggs. They also advocate boiling the custard [13] twice to eliminate persistent types of Staphylococci and Salmonella. Roberts and Wilson [14] claim that daily examination of workers for sores and head colds will help to avoid introducing Staphylococcus organisms during preparation of frozen foods, and they strongly advocate regulations for the care and handling of cream fillings during and after preparation. These precautions should be heeded by producers of frozen precooked foods and bakery items.

PATHOGENIC ORGANISMS

While English investigators indicate that certain strains of Salmonella may produce enterotoxic substances, this has never been shown in American laboratories. Accordingly, Salmonella are considered as only pathogenic and not toxigenic in the following discussion. Because of the serious illness which may be caused by these organisms, the aim of the producer of frozen foods must be to eliminate entirely the possibility of the product becoming contaminated by germs of human origin.

Salmonella is the most important cause of diarrheal diseases according to Rubenstein, Feemster, and Smith,[15] who found that four types of Salmonella were responsible for 70 per cent of 811 cases investigated. Although all age groups were involved, children were most susceptible. Convalescents and permanent carriers are frequently the cause of food infection with Salmonella organisms.

Segalove and Dack,[16] after inoculating *Salmonella enteritidis* experimentally into string beans, tomato juice, peaches, shrimp, salmon, corn, spinach, and peas, and incubating them at 22° and 37° F., noted unexpectedly that better growth occurred at the lower temperature.

Ostrolenk and Welsh [17] proved that Salmonella contaminated food may be the source of infection carried to other foods and water by means of flies. They showed that flies carried viable organisms as long as 4 weeks. Moreover, the fly passes the organism on to succeeding generations by infecting its eggs.

Food handlers were shown to be the major source of Salmonella poisoning in a study conducted by W. S. Stone [18] who found 44 Salmonella carriers and 5

Shigella carriers out of 2,000 food handlers. These handlers, generally asymptomatic themselves, were associated with several small epidemic outbreaks.

Army investigators[19] discovered that carriers of *Salmonella oranienberg* can be successfully treated with sulfaguanidine. Therefore, examination of handlers is not merely academic since such sources can be eliminated through positive therapeutic action.

Although the Kaufman-White[20] test has been used as an objective method of differentiating non-pathogenic and pathogenic strains of Salmonella by Edwards[21] and others, the question of whether Salmonella of animal origin are pathogenic to man has not yet been answered. Investigators have always considered this as a possibility, but no direct evidence has ever been found to prove it. However, studies have described an outbreak of Salmonella infection allegedly derived from internally contaminated chicken eggs.

There have been certain indications that Salmonella organisms not only survive freezing storage but remain sufficiently viable to cause gastrointestinal infections, but there is a question that this is possible. The frozen food industry should attempt to prove this beyond any doubt.

The Enterococci and other gastrointestinal bacilli may or may not be implicated in food infections from frozen foods since direct evidence appears to be lacking. However, the protection of spoilage usually associated with food intoxications does not apply against infections, and extreme precautions against contamination are necessary.

INDUSTRIAL CONTROL PROCEDURES

The frozen food industry thus far has failed to establish a sanitary code to protect itself and its customers. A committee of the A.P.H.A. has recommended using the M.P.N. (most probable number)[5 or/and 22] value as a measure of human contamination of frozen foods. Various states have established sanitary codes for shellfish and in such foods the raw products are controlled to some extent.

The writer has felt that an industry standard of 100,000 organisms per gm. incubated on tryptone glucose extract agar for 72 hours at 30° C. might be difficult to maintain. After he saw a plant which can handle more than a million pounds daily of some products, meeting a standard of 10,000 per gm., he feels firmly convinced that the industry can set up the above standard for fruits, vegetables, meats, fish, and poultry, and an objective of 250,000 per gm. on hamburg, sausage, and similar products. Furthermore the direct count method such as that of Breed[5 and/or 23] on milk should be used as an additional standard to determine the original condition of raw materials for all products processed by heat prior to freezing. A standard microscopic count of 1,000,000 per gm. or ml. should be considered maximum.

Simultaneously, contamination with organisms of human intestinal origin should be measured against a standard. A maximum M.P.N. value of 100 may seem high for most products. In shellfish[24] a value of 230 is interpreted as indicative of unfavorable conditions.

SUMMARY

Frozen foods have been remarkably free from suspicion of being health hazards both as to enterotoxic food poisoning and infectious diseases. An acid-forming streptococcus appears to be an active factor during spoilage, souring foods beyond edibility before enterotoxins can be elaborated. However, there is considerable possibility that pathogenic organisms may survive the freezing-storage treatment and retain sufficient viability to cause infectious diseases. These could be a source of

infection in frozen foods of the very best quality because the souring would not be present to warn the user. Frozen fruits and vegetables which may be served in raw salads, could very well be the source of infections. These can be controlled only through careful sanitary procedures in factories.

Laboratory methods of detecting the incidence of toxigenic or pathogenic strains of organisms are presently inadequate, and frozen foods may momentarily be implicated as health hazards. The industry, accordingly, has every reason to support thorough research designed to develop control techniques.

It is difficult without human test subjects to show through laboratory studies the effect of freezing, time of storage, type of substrate or growing medium, temperature of storage and other factors upon the viability of known toxigenic and pathogenic microörganisms, relative to production of enterotoxins and to pathogenicity. While the frozen food industry is at least no worse off in this regard than other food industries, as a relatively new development it could be very seriously affected should a major epidemic be laid at its door.

A review of the foregoing should not make the frozen food industry feel more secure, but rather should encourage it to accept the responsibility for increasing the scope of research devoted to solving the several important problems outlined.

ACKNOWLEDGMENT—The writer wishes to express grateful acknowledgment of the assistance of Miss Ruth Adamy in searching the literature on the subjects of Botulism, Staphylococcus food poisoning, and Salmonella infectious outbreaks.

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Current Trends in Nutrition Research in Canned Foods*

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FOR more than 25 years reports in the literature have dealt with various phases of nutrition research on canned foods. Most of these reports group themselves into three distinct patterns of research. In the first of these may be classed those studies seeking to establish the nutritive values of commercially canned foods with particular reference to their vitamin contents. The second pattern includes investigations designed to establish the effects of conventional canning procedures or operations on vitamins present in raw foods. The third pattern comprises studies devoted to establishment of the stability of vitamins in canned foods during storage or usage. Investigations of these three general types have significant public health implications because in the ultimate analysis they relate to the improvement of the nutritive quality of canned foods as consumed by the American public.

The importance of these several patterns of investigation is further reflected by the fact that they have constituted the main fabric of the current nutrition program on canned foods jointly sponsored by the National Canners Association and the Can Manufacturers Institute. This program, which has been elsewhere described,[1] was conceived prior to Pearl Harbor and inaugurated during the first year of the recent war. The National Defense Program of 1941 created a demand for more complete information on the nutritive values of canned foods and provided the direct stimulus for later inauguration of the program. In 1942, the wartime need for such data developed a high degree of coöperation between industry and educational institutions with the end result that an impressive volume of information on the nutritive values of canned foods was rapidly accumulated during the war years. The data thus far published as a result of this program will be considerably amplified by the end of 1947 through publication of the results of studies recently completed or currently in progress.

It is anticipated that work in these three phases of nutrition research will continue for some years to come, despite the great advances in knowledge made during the war, because of the sustained interest in these fields on the part of various laboratories associated directly or indirectly with the canning industry. However, during recent years our laboratory has engaged in specialized activities within these phases which were prompted either by new processing or equipment developments or by new interests arising as a result of the operations of the National Canners Association-Can Manufacturers Institute program. It is the purpose of this report to describe briefly several of the more

* Presented before the Food and Nutrition Section of the American Public Health Association at the Seventy-fourth Annual Meeting in Cleveland, Ohio, November 13, 1946.

important of these new departures which have concerned our laboratory during the past several years. In particular, projects which appear to have an ultimate public health importance have been selected for discussion.

EVALUATION OF MANUFACTURING OPERATIONS

In the investigations made under the NCA-CMI program, the 1942 and 1943 studies dealt chiefly with the vitamin values of commercially canned foods as manufactured, and with the effect of conventional canning operations on vitamins in raw canning stocks. These studies were carried out by extensive surveys of commercial plants and products. The findings suggest that, in general, those foods which were significant providers of certain vitamins in the raw state were also significant contributors of those same vitamins in the final canned product.[1] Tests on the effects of canning operations on vitamins in raw canning stocks have shown that the extent of the effect varies with the nature of the product and with the vitamin under consideration. Moore, et al.,[2] Wagner and Associates,[3] and Lamb[4] have found that the degree of retention of ascorbic acid in canned citrus products is consistently high during conventional canning. However, as indicated by other reports,[5, 7] vitamin retentions in the case of certain other standard canned food commodities showed a considerable degree of variability, with particular reference to ascorbic acid. The more important reasons for these variations in ascorbic acid, which in the case of certain items approached the tenfold value, have been reviewed by Jackson, et al.,[8] and by Feaster and Alexander.[6]

For nearly ten years, field surveys of canning operations had largely been conducted as a result of the interest of laboratories connected with the industry rather than as the result of the practical interest of canners. As notable exceptions, of course, must be noted those manufacturers producing special purpose foods or foods exceptionally high in specific nutrients, or those seeking A.M.A. Council on Foods and Nutrition acceptance for their products. However, publication of the early results of work in the NCA-CMI program led to an awakened interest on the part of canners as to the efficiency of their own operations since, for the first time, a basis of comparison for the products of the industry as a whole was available. Canners whose products or plants had not been included in the studies desired to know how their products or operations compared with those reported; others sought to learn how existing operations might be improved so as to place their products in a more favorable position with respect to vitamin values or vitamin retention. Interest was particularly manifest in ascorbic acid because of the A.M.A. Council on Foods and Nutrition requirement for a minimum vitamin C value in Council-approved ascorbic acid carriers. An increased number of requests from canners for field surveys of factory operations have therefore been received by many laboratories associated with the industry.

In Table 1 are shown results typical of many of those obtained in such field surveys. The three plants listed were operated by one manufacturer; the canning lines surveyed were of conventional types differing only in detail; the basic equipment, operations and supervision were of one general pattern. While all samples assayed can be considered significant sources of ascorbic acid, variations in the per cent retentions, even in the same plant, are wide. In these particular instances, the occasional slow speed of cannery operations was the major factor influencing low ascorbic acid retention. Variations in vitamin C retention of from 52 to 80 per cent in tomato juice canning operations have

TABLE 1

Ascorbic Acid Retention in Tomato Juice During Canning

Plant	Survey Number	Ascorbic Acid: Content Mg./100g.	Ascorbic Acid: Retention * Per cent	Ascorbic Acid: Per cent Daily Allowance † 100 Gram Portion
1	1	18.2	81	24
	2	14.8	67	20
	3	18.4	69	25
2	1	12.3	54	16
	2	13.7	52	18
3	1	9.4	44	13
	2	12.5	61	17

* Based on chopped tomatoes
† Based on 75 mg. daily adult allowance

been described by Guerrant, et al.[7] Results of 1943 and 1944 surveys conducted by Lamb[9] showed ever greater deviations, namely, 32 to 94 per cent.

It has become clearly apparent that much may be accomplished toward improved vitamin retention merely by more effective operation of existing equipment. Surveys such as the one described have proved convincing to practical cannery management. Likewise effective has been expression of the results in terms of the percentage of the daily vitamin requirement supplied by convenient portions of the final product. Such a method of expression translates improvements in operations directly into an understandable benefit to the consumer which will accrue from such improvements. In this way, the basic reason for effective operations is made more apparent, much more so than simple statement of the findings showing vitamin content on a percentage or on a volume or weight basis. Sustained surveys of this type over several years should result in distinct raising of nutritive quality levels in many canned foods.

EVALUATION OF NEW HEAT PROCESSING TECHNIQUES

During recent years, there have been several important practical applications of new heat processing techniques. It should be frankly stated that these developments have come about more from interest in improved organoleptic quality in the final product or improved control of operations than from the consideration of improved vitamin retention. Whatever the initial purposes of the developments, study of these new techniques from the nutrition standpoint represents a new trend of investigation, and the results of several of these studies may be of interest here.

PRESTERILIZATION OF ACID VEGETABLE JUICES

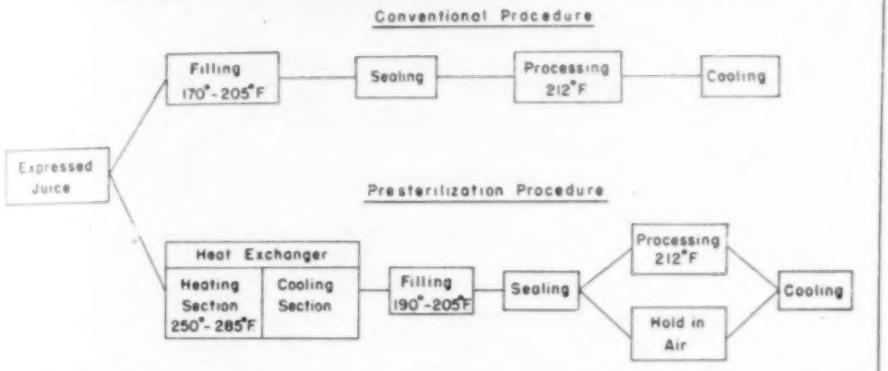
For a number of years, sporadic spoilage has been experienced by canners of tomato juice or vegetable juices consisting largely of tomato juice, due to heat resistant spore-forming organisms capable of causing the "flat sour" type of spoilage. As made clear by Pearce[10] and by Williams,[11] the heat process commonly employed in the conventional canning procedures will not prevent spoilage due to such organisms, and their control depends upon observance of strict precautions in the plant.

As a result of work begun in 1940, Wessel and Benjamin of this laboratory suggested in 1941 a new means for process control of these organisms, which has now come into widespread commercial use.[12] In this new processing technique, the juice is heated by pumping through a suitable type of heat interchanger to temperatures in the range of 250° to 285° F., and is held at the elevated temperature for a few seconds

FIGURE I

Salient Features of

Conventional and Presterilization Procedures for Canned Tomato Juice



in order to effect the desired sterilization, and is then cooled and filled into cans at temperatures between 190° and 205° F. The sealed cans are inverted or are given a short boiling water process to sterilize the top can end and water cooled. The first commercial installation for this new so-called presterilizing or "flash" processing technique was made in 1941, but in 1946 more than 50 such installations were in commercial operation with complete success. The quality of the juices subjected to this high temperature—short time sterilizing process or flash process is entirely comparable to juice packed by the conventional process. Figure I shows schematically the salient differences between the conventional and the new flash processing methods for tomato juice.

Commercial use of the presterilizing process raised the question of whether it would favor greater retention of vitamins, particularly of thiamin, in the acid products for which it is used than does the conventional procedure, since high-short processing has been found to favor vitamin retention in certain low-acid products.[8] Work in 1944 and 1945, however, suggests that the ranges of thiamin and of ascorbic acid retention in tomato juice are practically identical for both procedures and that any major differences found in the overall procedures may be ascribed to factors other than time and temperature of processing. Data on thiamin retention during flash and conventional heat processing operations are shown in Table 2.

TABLE 2

Thiamin Retention in Tomato Juice

Effects of Flash and Conventional Processing

Type Process	*Number of Surveys*	*Range of Thiamin Retention During Processing † Per cent*
Conventional *	5	82 to 110
Flash	3	87 to 102

* 307 x 409 cans

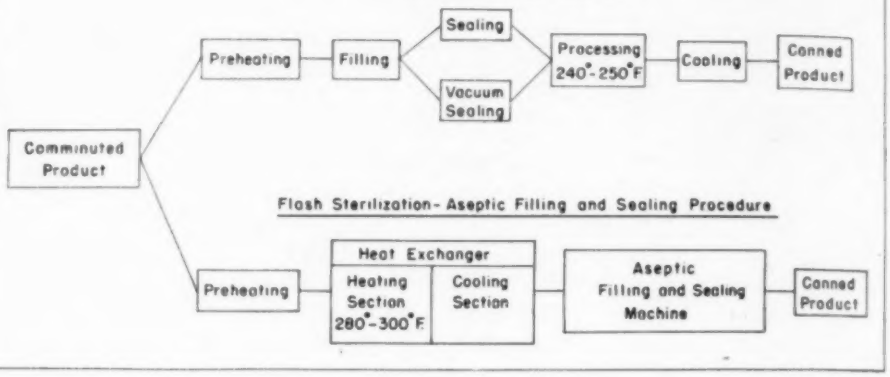
† Based on the thiamin content of the juice before processing

FLASH PROCESSING—ASEPTIC FILLING OF LOW ACID PRODUCTS

Another new type of flash processing adaptable particularly to low-acid products capable of being moved by pump through a tubular heat interchanger came into commercial usage shortly before the outbreak of war. This procedure is especially well adapted to the packing of low-acid vegetable purees, strained foods, certain dairy products,

FIGURE II

Conventional and Flash Sterilization-Aseptic Filling and Sealing Procedures for Low Acid Comminuted Products



and other foods of a semi-solid consistency. In many instances this technique has yielded products distinctly higher in quality than those produced by conventional means. It has further made possible the canning of commodities whose quality would be entirely unacceptable to consumers if processed by conventional procedures. Figure II broadly compares this new process with the conventional procedures for vegetable purees commonly employed. As will be noted, in this new method of processing the sterilized food and the sterilized can meet in the aseptic filling and closing machine where the filling and double-seaming or sealing are carried out. Thus, the quality of the final product in this procedure is independent of can size. In the conventional method of processing, food is heated in the sealed can. To effect sterilization, heat must penetrate from the body and ends of the container to the food in the center of the can. This rate of heat penetration is quite slow for food products which heat largely or solely by conduction; likewise the rate of heat penetration into large cans is slower than into small cans of the same conduction-heating product. This means that at conventional process temperatures (240° or 250° F.) the process times required for the larger can sizes are much longer than those necessary for the smaller container sizes. The product quality in the large containers is therefore invariably lower than the same product packed in the smaller can sizes.

The influence of the high-short type of process on vitamin retention in low-acid foods has been under investigation in this laboratory since 1932. Some of the results obtained have been reported elsewhere[8]; likewise the effects on vitamins of high-short processes with sterilizing values (F_0 values) several times higher than those used conventionally have been described.[13, 14] Briefly stated, in the high-short processing of low-acid, conduction-heating products, the ratio of the rate of thermal destruction of bacteria, capable of causing spoilage, to the rate of thermal destruction of certain of the vitamins is considerably greater than the similar ratio in conventional processing of the same product.

The relative effects on thiamin of the flash-aseptic filling and closing process and the conventional procedure on pea puree and cream style corn are shown

TABLE 3

Thiamin Retention During Flash and Conventional Processing

Product	Type Process	Process Order ° F.	Thiamin Content Mg./100 gm.
Cream Style Corn	Conventional	6	0.040
	Flash	26	0.101
Cream Style Corn	Conventional	9	0.025
	Flash	26	0.053
Pea Puree	Conventional *	5	0.180
	Flash †	24	0.2214

* Composite of 6 cans (211 x 413)
† Average of 10 individual cans (211 x 413)

in Table 3. Except for the manner of thermal processing, these purees were identical and the superior retention of thiamin by the flash process is clearly suggested by the data. This new processing technique is to be extended to many canned products for which it is suited.

AGITATED VACUUM PACK FOR LOW-ACID VEGETABLES

The vacuum packing of certain low-acid vegetables has been a commercial procedure for a number of years. This style of pack, widely used for whole grain corn, is differentiated from the more familiar "brine style" pack first, by the higher ratio of solids to liquids in the can, and second, by the use of vacuum sealing for the container. In the brine style pack, after the corn has been filled into the can, the fill of the container is completed by brine. In the vacuum pack only 1 to 2 oz. of brine are added to the can. During heat processing, the moisture in the evacuated can is converted to steam which serves as the transfer medium. The heat process required commercially for the vacuum packed 307 x 306 can of whole grain corn (35′ @ 250° F.) is more severe than that necessary for the brine packed No. 2 can of the same product (25′ @ 250° F.) although the drained weights of both containers are closely similar.

Equipment has been available for many years for agitation of cans during processing in order to increase the rate of heat penetration into the can and thus shorten the process time required. Over the past two years experimental work was carried out in our laboratories to determine the possible benefit of agitating vacuum packed products during processing. Agitation in products of this type increases the rate of heat transfer within the vacuum sealed container and thus permits adequate sterilization in a much shorter time than when the product is processed without agitation. Conceivably, this shorter process time might influence color and flavor of the final product. Actually, distinct quality advantages to both white and yellow vacuum packed whole grain corn were found to result and this type of process became commercial for corn during the 1946 season.

To test effects of this new processing technique on vitamin retention, controlled experiments were carried on on whole grain corn during the 1946 season. The results of two series of experiments are shown in Table 4 covering the two can sizes used commercially. For direct comparison, brine style, still-processed vacuum, and agitated vacuum packs were made in the same size of container and the thiamin and niacin contents of both the solid and liquid phases in the cans were determined in order to arrive at the total amounts of these vitamins in the containers after processing. In this way, correction was made for loss of vitamins from the solid

TABLE 4

Vitamin Retention in Canned Yellow Whole Grain Corn

Effect of Style of Pack

Series	Style Pack	Can Size	Process Schedule: Time Min.	Process Schedule: Temp. °F.	Vitamin Retention*: Thiamin Per cent	Vitamin Retention*: Niacin Per cent
1	Brine	307 x 306	25	250	68	106
	Vacuum	"	35	250	51	95
	Agitated Vacuum	"	12	250	75	94
2	Brine	603 x 408	40	250	61	94
	Vacuum	"	60	250	33	98
	Agitated Vacuum	"	17	250	51	99

* Based on the vitamin contents of the corn before processing

to the liquid phases by solution or extraction during processing.

The data in Table 4 indicate that agitation of vacuum packed yellow whole grain corn during processing increases thiamin retention over that attained in the orthodox or still-processed vacuum style of pack. Thiamin retention in the brine style and agitated vacuum packs appeared approximately equal; other series not reported here, however, have indicated a somewhat greater thiamin retention for the new processing technique. Niacin retention in the product appeared not to be influenced by the style of pack. Besides the quality advantages to vacuum packed whole grain corn bestowed by the agitating process, a higher retention of thiamin than that achieved in the conventional vacuum pack method is clearly indicated.

CONCLUSION

An attempt has been made to present typical studies currently included in nutrition research on canned foods. Certain of these appear to have distinct public health implications since they should ultimately lead toward even greater degrees of vitamin retention in certain canned foods than are now attained commercially.

Acknowledgment—Appreciation is expressed to Drs. J. F. Feaster and Margaret Ives and Mrs. Mardell Tompkins for the data included in this manuscript and to Miss Edwyna Preiss for her valued assistance in its preparation.

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Proposed Report on Field Training of Public Health Personnel*

THE proper training of public health personnel requires not only formal academic training but also the opportunity to study the field application of the principles learned in the classroom. Field observation and study are to public health education what the student laboratory and internship are to medical education.

It would, therefore, be desirable to incorporate a period of field training as a part of formal education provided by various accredited schools and universities. Such a period is required in the training of public health nurses and is required by some universities for other types of personnel. To require such experience for all personnel is not feasible today because of the lack of a suitable number of areas within which such training may be obtained. It is essential, therefore, that suitable field training areas be developed and that these areas attain certain standards as evidence of their capacity to serve as student training centers.

It is apparent, however, that great variation exists in form and objective of field training. The student who merely visits a health department for a few hours a day is undergoing a very different educational experience from that of the student who spends several months as a junior employee; yet each is experiencing field training. Each type has its place, yet the purpose served by each is very different. The types of field training and the objectives of each type are set forth below.

Equally apparent is the fact that every public health agency is not suitable for the purpose of field training. Such training requires not only the conduct of a health program worthy of study and demonstration, but also personnel who have both time, willingness, and ability to accept students for training. Just as certain hospitals are not suitable for the teaching of nursing or the training of interns or residents, so certain health departments may not be acceptable agencies to conduct public health training. Similarly a department capable of furnishing a certain type of field experience may not be capable of offering other types of training.

The committee has attempted, therefore, to establish certain standards which may serve as a guide in the development of field training areas. The committee recognizes that these standards are, of necessity, provisional and in many instances reflect a lower quality of service than might be desired. On the other hand, it has been forced reluctantly to accept the fact that many field training areas in all parts of the United States do not attain even these minimum standards. Like all other standards, they should be raised at a later date when

* The Committee on Professional Education of the American Public Health Association publishes this report before transmittal to the Governing Council in order to permit the members and Fellows of the Association to review it and to offer criticisms and suggestions in the further consideration of the report. Suggestions should be mailed promptly to the Committee on Professional Education, A.P.H.A., 1790 Broadway, New York 19, N. Y.

This report, like all other statements of the committee on professional and technical qualifications in public health, is subject to periodic revision in order that it may be kept abreast of the best thought.

the quality of service that they attempt to measure has been suitably improved.

The committee likewise recognizes that there is at present a great dearth of suitable field training areas. This dearth has necessitated the utilization of facilities that are lacking many of the features that should be required of all field training areas, and at the same time has prevented the schools of public health and the universities from requiring the amount of field experience that they would otherwise desire. This lack of facilities is found in all parts of the United States.

The shortage has been brought about in part by the fact that field training is expensive under all circumstances and especially if it is to maintain suitable standards of quality. The quality of health service performed by the agency must be high, a fact which in itself implies appreciable expenditures. In addition, the presence of students is time consuming to the staff. Yet unless the staff members devote certain time to their training responsibilities, the student can learn but little from the experience. Proper field training, therefore, usually necessitates the employment of additional staff to assume direction for the training or to compensate for the time devoted to this activity by the regular staff. While the training area benefits from the stimulus of student visits, criticism, and participation, it is believed that the added expense should not be carried by the local community that is already supporting a health program of high quality. It would seem reasonable that the added expense should be assessed against the general cost of public health education. The universities, however, cannot be asked to carry the financial burden of providing field training. Their funds are extremely limited, drawn largely from limited endowment or from the taxpayers of the few states in which the universities are located. These funds must be used to carry the mounting costs of formal academic classwork. The small sums that they can afford to pay for field training charges cannot be appreciably increased without new sources of revenue; at present these fees are grossly inadequate to recompense the community for its added expenses incidental to the development of proper field training facilities. Were the added costs to be paid by either the university or the state, the facilities would inevitably become limited to reception of students from certain colleges or states. This would not only result in an uneven distribution of costs but also result in undesirable provincialism.

The committee is, therefore, of the opinion that the cost incidental to the development of better field training facilities should be borne by the federal government except for those areas offering opportunities only for observation and orientation, which are considered to be state responsibilities. Federal interest in public health training and education has already been expressed in the provisions for training stipends. It is, therefore, recommended that additional grants be made through state health departments for the specific purpose of developing in some states one or more field training areas which will offer to persons, irrespective of school or residence, the types of training set forth in this report and will meet the standards likewise set forth herein.

DEFINITIONS AND OBJECTIVES OF FIELD TRAINING

Field training is defined as an opportunity to study the field application of the principles and practices of public health. There are several types of field training, each of which is designed to serve a distinct purpose. These types are:

A. *Observation*

Definition—A planned visit to a health agency to observe the pub-

lic health program without active participation therein.

Objective—To see the functioning of an efficient community health program. The duration of the visit is usually brief (one to a few days). The planning is individualized on the basis of past experience and special interests. Observation may be of value to the uninitiated as well as to the highly skilled.

B. *Orientation*

Definition—Preparation of a person for a specific job under the auspices of the employing agency.

Objective—To acquaint the prospective employee with administrative details and policies of the employing and related agencies and the conditions under which he is to work; for example, background, laws, regulations, records, personnel, and health problems of the area. The duration of a planned period for orientation is usually a matter of a few weeks.

C. *Supervised Field Experience*

Definition—Planned instruction observation and active participation in a comprehensive organized public health program as an integral part of or a sequel to formal academic training in public health.

Objective—To learn to apply the basic principles and skills studied in a university course to actual field situation. It may or may not be a requirement for an academic degree. The duration of a planned period of Field Experience is usually from 2 to 4 months.

D. *Apprenticeship*

Definition—An extended period of active service under supervision in a public health program but without prior academic training in public health.

Objective—To select personnel best suited for formal academic training, to prepare them to receive the maximum benefit from such training and to develop certain elementary skills by participation in the public health program as assistants to qualified workers in their professional field. The period of apprenticeship is usually for a period not to exceed one year.

E. *Residency*

Definition—An extended period of active service under supervision in a public health program following a period of formal academic training in public health.

Objective—To develop through supervised practice a high degree of technical skill and confidence in a person who has had broad basic academic training in public health. This is usually accomplished through occupancy of a first level staff position in an organized health agency already employing competent supervisory personnel. It corresponds to the year of supervised experience required in public health nursing and is comparable to the residence required for certification in medical specialities. It may or may not be a requirement for an academic degree.

MINIMUM STANDARDS FOR FIELD TRAINING AREAS

I. TYPE OF AGENCY

A. Well organized and well established official local health department, either county, city, or district, or

B. Well organized and well established official and nonofficial agencies in which there is joint planning of the training program.

II. UNIT OF POPULATION SERVED

Although no unit of population is specified, experience shows that areas of less than 25,000 population are rarely qualified to give suitable field training. In large units serving several hundred thousand persons or more, it is customary to select certain areas within the unit to be developed for student programs.

III. LOCATION AND TYPE OF AREA

A. The local area should present a cross-section of typical health and

administrative problems for that section of the country in which the area is located.

B. The field training area should be located in a state having the necessary facilities to give strong leadership and close supervision to the project.

C. For orientation the area preferably should be located in the state in which the person is to work.

D. The area selected for supervised field experience should present problems comparable though not necessarily similar to those of the area in which the student will return upon completion of training. Training need not be given in the same or a contiguous state. There should be joint planning, evaluation, and coördination of student academic and field work between educational institution and field training center.

E. For apprenticeship and residency any local unit which qualified as a field training area so far as concerns the basic service program and quality of staff may be used.

IV. BASIC SERVICE PROGRAM

A. A comprehensive program should be planned on a community-wide basis in coöperation with other community agencies and based upon a careful study of local health problems. It is desirable that the community plan should be based on facilities and needs for preventive, hospital, and medical care services.

B. The activities of official and non-official agencies should be coördinated into a community-wide program. The students should have experience in working with all types of agencies in the community contributing to the health, welfare, and education of the people.

C. The state health department, in coöperation with the local unit, should plan for periodic program evaluation based upon evaluation standards of the American Public Health Association.

D. The scope and quality of the public health program should be above the median in at least half of the applicable items as set forth in the *Health Practice Indices* 1943–1944 prepared by the Committee on Administrative Practice of the A.P.H.A. August, 1945, and within the first quartile for at least half of the items applicable to the work of the students for whom training is contemplated.

V. PERSONNEL

A. The number of personnel should be adequate to provide local services and educational experience for the students. The desirable number of personnel should be not less than—

1. A full-time medical health officer and medical service, either full- or part-time equivalent to one medical officer per each 50,000 persons in excess of initial 50,000 population.
2. One nurse at the supervisory level for every unit of ten or less staff nurses.
3. One staff nurse per 5,000 persons (exclusive of complete bedside nursing care).
4. One sanitation worker with graduate training in public health who, if not a public health engineer, should be supervised at the state, district, or local level by a qualified public health engineer who participates in the students training program, and one sanitarian or sanitary inspector per 15,000 population in excess of initial 15,000 population.
5. The services of a health educator either as a member of the staff or available on a state or district basis.
6. One stenographic, clerical and

record person per 15,000 population.

7. An educational director for each type of personnel received for training, such director to be available either as a member of the local staff or as a member of the district or state staff with special responsibilities for training duties.

B. The staff of the health department should meet professional standards established by the Committee on Professional Education of the American Public Health Association, National Organization for Public Health Nursing, and other national voluntary professional groups, the U. S. Public Health Service, and the state merit system in which the area is located. Members of the staff who deal with students should be qualified by education and experience, and should be mature, emotionally stable persons who are interested in teaching.

VI. STUDENT LOAD

A. Observation—no formal limitations in number but too frequent visits may impair efficiency of unit.

B. Orientation, apprenticeship, and residency—no formal limitations in number but in general more students can be accepted at any one time than for supervised field experience.

C. Supervised field experience—in general, not more than one student at any one time per corresponding qualified staff member.

D. It is desirable that the total number of students at any one time, other than for observation, should not exceed the rate of one per corresponding staff member.

E. No staff member should have continuous direct student supervision responsibilities (throughout the entire year) for more than 9 months out of the year.

VII. RESPONSIBILITIES OF VARIOUS AGENCIES

A. State Health Department—

1. To help plan and evaluate the basic and field training programs.
2. To provide general supervision and consultation. In large urban units the general supervision and consultation service may be given largely by the central staff of the local health department.
3. To assist with the coördination of academic and field training programs.
4. To assist in providing in-service training for staff members participating in the student program.
5. To serve as a field training student placement clearinghouse for all agencies within and without the state.
6. To be responsible for securing adequate financial support for the training program based on cost analysis of the program.

B. Local Health Department—

1. To maintain a basic service program so that the area will qualify as a field training area according to standards listed above.
2. In coöperation with the state department of health, universities, colleges, and other agencies using the area, to plan, develop, administer, and evaluate the educational experiences provided for the students.

C. University, Colleges and Other Agencies Using the Area—

1. To determine individual student needs and to assist in planning of educational experiences for students.
2. To assist with coördination of academic and field experiences.
3. To assume such financial responsibility for student training as may

be agreed upon with federal, state, and local health agencies.

D. Federal Agencies—

1. To help finance field training areas through financial grants-in-aid by way of the selected state department of health or educational institutions.
2. To act in a general advisory capacity to the state or local agencies through the the regional offices of the federal agencies.

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A New Method of Selecting Health Officers-in-Training

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Director of District Health Administration; and Director of Personnel; Department of Health, City of New York

THE candidates seated themselves around a table and conducted their own examination. The examiners just watched and listened. This was the new method which the New York City Department of Health used in selecting its new Health officers-in-training.

Proper selection of individuals for the Health officer-in-training group is a matter of concern both to the individual and to the department. The training course itself is of two years' duration, at a stipend level, and the individual pledges himself to remain two years in the field for which he is trained. A decision to enter this training course is a serious one, often involving considerable readjustment of personal and family plans. The trainee who is selected has the right to feel that those responsible for his selection believe he will make good in his new career venture.

The department is concerned with training career men and women for positions in public health administration or as executives in specialized fields. Each candidate has given evidence of adequate basic training in medicine; whether he possesses the aptitudes and potential skills necessary for a successful executive officer in public health is the problem of the examining committee. Public Health knowledge is not required, for the successful candidate will undergo two years of specialized training in this field. More important factors are intellectual curiosity; the ability to reason logically, to present facts clearly to others, and to make one's point without arousing antagonism; leadership ability; easy acceptance by a group as a desirable participating member; an awareness of broad social and community problems and trends; an "engineering sense" in attacking problems; and adequate reasons for wishing to specialize in a particular field. These and a host of others are the intangible but tremendously important qualities inherent in the successful career individual in public office. Usually, written examinations are employed to test knowledge of subject matter and subsequent oral examinations are employed to evaluate such traits as those mentioned above. It is believed that the group oral performance test described in this paper offers a novel means of evaluation which is more effective than the traditional examination techniques.

THE POSITION

Health-officers-in-training are nominated by the Department of Health, subject to approval by the Municipal Civil Service Commission, for a two year training course. Eight months of this will be in a school of public health, leading to the degree of Master of Public Health. Each trainee is also

given a 16 month orientation course within the Department of Health. Tuition fees and a stipend for the two year program are paid for out of funds made available by the U. S. Public Health Service.

Those who complete the program are eligible to participate in a competitive civil service examination for the position of assistant district health officer ($4,500 per annum and over).

The minimum requirements for the position of health-officer-in-training are:

1. United States citizenship.
2. Graduation from an approved medical school.
3. One year interneship or residency in a general hospital approved by the American Medical Association (except that those applicants whose interneship or residency had to be reduced because of the war emergency shall be required to have nine months' interneship or residency in a general hospital approved for interneship by the American Medical Association).
4. Eligibility for license to practise in New York State.

THE CANDIDATES

Candidates for these positions are secured by means of a continuous recruiting program. Directors of the various bureaus of the Department of Health are always alert to the development of potential health officers among their staff physicians and among the applicants for medical positions. Administrative officials in schools of public health are aware of this program and refer some of their most promising students and applicants for consideration.

Each candidate is interviewed personally by the Director of District Health Administration when he first presents himself. This interview lasts for approximately an hour and serves the dual function of discouraging those who are obviously not qualified and encouraging those who seem qualified.

THE PRELIMINARY EXAMINATION

All candidates who had received this personal interview during the four month period since the previous examination for this position and who had become sufficiently interested to file applications were invited to an "experience interview test." Each of the twelve candidates who responded was interviewed for a period of approximately 15 minutes by a board of examiners consisting of three staff members of the Department of Health (the Director of District Health Administration, the Director of Personnel, and a Senior District Health Officer), and Dr. Thomas Dublin, Professor of Preventive Medicine at the Long Island College of Medicine. This interview served the purpose of eliminating those candidates who were unable to meet the minimum requirements as well as those who, in the judgment of the examiners, were obviously not qualified for the training program. Four candidates were eliminated at this stage.

THE PREPARATORY MATERIAL

Each participant in the preliminary examination was given a set of instructions which (1) explained the purpose of the experience interview, (2) pointed out that those who seemed best qualified would be summoned for a "group oral performance test" five days later, (3) indicated that results of the preliminary test would be available within two days, and (4) stated that as part of the group test, "each of those summoned will be called upon for the following:

I.

You and the other members of the group, as leading physicians known to be interested in matters affecting the health of your community, have been invited by the Commissioner of Health of the City of New York to consider the following problem, and to give him group recommendations. These recommendations are to be forwarded to the Commissioner at the close of your meeting:

Rabies among animals is increasing rapidly. There are about 200,000 licensed dogs and

an estimated additional 200,000 dogs in the New York City area. What control measures should be taken?

II.

Assume that you have been called upon to deliver a talk of three to five minutes on whichever one of the following subjects you select. Deliver the talk as if the group specified were before you now.

1. You are attending a meeting of the Committee on Public Health of your County Medical Society. The committee has passed a resolution urging the City Department of Health to establish a post-war program for the control of tropical diseases. As a member of the committee you are called upon to express your views as to what the official health agency in the city might do toward this end.

2. You are attending a meeting of the Parent-Teachers Association of a private school to which you send your child. The subject of rheumatic fever is being discussed and you are called upon by the chairman to discuss the public health implications of rheumatic fever as it might involve this school.

3. The District Health Officer has requested you, as a leading physician in the community, to address a group of parents concerning the following problem:

A large number of veterans' families have moved into a local housing project. There are more than the usual number of babies and preschool children in this group. Although the District Health Officer believes that immunization is necessary, the parents have been slow to have this done.

4. You, as a leading pediatrician, have been requested to address a group of general practitioners in your County Medical Society on the role of the general practitioner in carrying out systematic health supervision and health promotion of well children.

5. The County Medical Society has requested you to speak as a representative of the Department of Health on the use of gamma globulin for measles.

6. At a Kiwanis luncheon you as one of the medical members are asked to tell the group about the present smallpox situation in New York City and advise them what to do for themselves and their families.

7. A community which has many mosquitoes hears that there are several veterans in a nearby hospital with malaria. The voluntary health agencies have become alarmed and have asked you to speak at a joint meeting of the members of these agencies to discuss the problem.

8. In a community close to which there is a large shipyard, venereal disease has increased suddenly and there seems to be in the community a correlated social disorganization. Discuss this problem in one of the following roles:

(a) Medical officer of the shipyard to the employees
(b) Venereal disease control officer of the area to leaders of civic agencies
(c) Director of social hygiene to a management group
(d) Venereal disease control officer to a women's club group

THE GROUP ORAL PERFORMANCE TEST

The rating board for this test consisted of the same four examiners who participated in the experience interview. Two of them sat along each of the long walls of the examination room.

As the candidates arrived they were allowed to select their own seats around a conference table. As soon as all eight * were seated, each was given a single sheet on which was the same information as in Part I of the preparatory material, with the addition of the following two paragraphs:

You will be rated on the value of your contribution to the recommendations made, your approach to the problem, your group participation, and your manner and speech in presenting your opinions.

Speak clearly so that everyone can hear you. The group itself will decide how the discussion is to be carried on. Start the discussion as soon as everyone has finished reading this statement. Continue until a signal is given to stop.

No additional directions were given and no questions were asked by the examiners.

Within 2 minutes one of the candidates took the lead and before long all were participating in the discussion. After about 30 minutes they agreed to select one of their members as secretary.

About 30 minutes later the examiner in charge announced the conclusion of

* If more than ten or twelve candidates had been involved, it would have been necessary to divide them into subgroups.

that part of the test, and a 5 minute recess was taken.

The examiners then reversed their seats along the wall, while the candidates elected to resume the same seats at the table.

The material which was distributed to the candidates at this point consisted of Part II of the preparatory material, with the following additional comments:

> After you have finished, the members of the group will assume that they constitute the group you have chosen and will ask you appropriate questions.
>
> The order in which each individual is to speak will be determined by the group. The group will also decide how much time should be allowed for general discussion after each talk.
>
> Start the discussions as soon as everyone has finished reading this statement.
>
> Speak clearly. You will be rated both on your own presentation and on the questions you ask.

After a very brief discussion the group selected the first speaker and agreed to proceed in the same order as they were seated.

When the first speaker had concluded his talk, the group was at a loss as to how to proceed. It was obvious to the examiners that no candidate had read the last four paragraphs of the instructions, and it became necessary to direct the group to do so. If this development had been foreseen, it would have been a simple matter to place this explanatory material at the beginning of the instruction sheet.

Thereafter the program continued without complications. It may be of interest to note that every speaker exceeded the prescribed length of time for the talk (in one case the elapsed time was 15 minutes), but the group rigidly held to its self-imposed time limit of 5 minutes for general discussion after each talk.

The examiners had prepared a third problem similar in form, but not in content, to the first. This was to be given to the group at the examination so that no previous preparation for answering could be made. However, the examiners unanimously agreed that they had learned enough about the candidates on the basis of the two prepared topics. The examination was concluded slightly less then 3 hours after it had begun.

SOME PERTINENT OBSERVATIONS

1. *Previous Experiments*—The technique of the group oral performance test is based upon methods developed by the British Army in selecting officers during World War II and experiments conducted by the Test Development Section of the U. S. Civil Service Commission under the direction of Mr. Milton M. Mandell.

2. *Advance Preparation*—One important variant introduced in the health officer-in-training test is the device of presenting the problems to the candidates in advance. This was designed to eliminate the advantage which might accrue to some candidate or candidates because of fortuitous special knowledge of the subject.

In this connection, two important factors should be noted. In the first place, this examination is not designed to test for knowledge. In the specific situation, a common basic knowledge of medical theory could be presumed because of the minimum requirements; no further knowledge was considered as important for selection purposes because successful candidates would undergo the two year training course.

In the second place, the ability of the candidates to gather appropriate data in the five day period after receiving the preparatory material was considered to be a significant element in rating.

The candidates were not given specific information about the nature of the test in advance. For example, they were not informed that there would be a general discussion after each individual talk.

3. *Name Cards*—Another innovation which is interesting if not quite so important is the use of name cards. Each candidate was furnished with a folded sheet of heavy cardboard (5″ x 10″) with his own name in large letters on two sides. This had the double advantage of enabling the candidates to address each other by name, thus minimizing the artificiality of the situation, and of insuring the examiners against assigning ratings to the wrong people.

4. *Rating Factors*—The examiners rated each of the candidates on each of six factors. Each examiner determined his final rating of each candidate by adding the six factor ratings and the experience rating (arrived at in the preliminary examination) and dividing by 7. The six factors and the elements considered under each factor were:

1. *Appearance and Manner.* Poise, physical alertness, nervousness, restlessness, attentiveness, mannerisms.

2. *Speech.* Power of expression, vocabulary, diction, modulation.

3. *Attitude Toward Group.* Tact, coöperation, ability to mix, flexibility.

4. *Leadership.* Ability to assume lead without giving offense; acceptance by group.

5. *Contribution to Group Performance.* Team-worker or prima donna; awareness of objectives of group discussion, ability to reconcile differences.

6. *Scientific Approach.* Ability to marshal data, awareness of implications, ability to reason, ingenuity, mental alertness, judgment.

5. *Seating Arrangements*—No chair was provided at the head (or at the foot) of the table. Therefore no one candidate could receive any advantage of apparent leadership due to seating. If the group had selected its own chairman, he could of course have moved his seat around to the head of the table. It was interesting that the group did not select any chairman.

The examiners were seated far enough away from the table to allow the group to forget (at least occasionally) that they were present, but not so far away as to miss anything. At the intermission in the middle of the test, the examiners changed their seats to insure adequate opportunity to observe each candidate.

6. *Extent of Participation*—The degree to which each candidate participated was an important element of the examination. The technique of a brief individual talk was incorporated in the test specifically to insure adequate consideration of even those candidates who might not participate in the general group discussion.

7. *Results*—It was the unanimous opinion of the four examiners, as well as the independent judgment of each of three observers with testing experience but no medical background, that three of the candidates should be considered as not qualified for the training course, while the remaining five showed considerable potentiality. There was less agreement concerning the rank order of the five who were considered qualified. With the exception of one examiner, however, all placed two specific candidates in either first place or second place.

Advantages of the Group Examination—The group performance test appears to possess the following advantages over the ordinary oral personality interview:

1. It enables the rating examiners to observe each candidate in action for a period of 3 hours. In the same amount of examiner time each candidate could be granted an individual interview of only 20 minutes.

2. It permits each examiner to devote full time to observing, listening, and taking notes.

3. It eliminates any tendency on the part of examiners to use the oral interview to show what they know rather than to evaluate the candidates.

4. It prevents any loss of reliability caused by the use of different questions for different candidates as well as by information given to later candidates by those examined earlier.

5. It minimizes the effect of the inevitable lack of continuous concentration on the part of examiners.

6. It provides a more natural situation than the usual question and answer contest between a candidate and his examiners.

7. It eliminates any suspicion on the part of any candidate that other candidates may be shown favoritism, be given easier questions, or have a lucky break. It may even convince him that some other candidates are better qualified than he is.

8. It eliminates the following dangers in the conventional oral interview situations.*

a. "There exists a tendency for panel members to slant their attention to the candidate's response to their own questions."

b. "It has been found that the rating to any candidate tends to carry over positively to the following candidate. The consequence is a species of halo effect."

* Pointed out by Norman J. Powell, and Harold Levine in a mimeographed "Manual of Procedures in Oral Tests" prepared for the Civil Service Commission of the City of New York.

9. It provides very valuable information concerning the action of each candidate toward the other members of the group, as well as his reaction to their actions. This is particularly important in testing for positions where group discussions and conferences are essential.

10. It presents specific evidence concerning the ability of each candidate to be a leader in a group of professional colleagues.

11. Those who participate seem to find it more interesting than the individual interview. (Incidentally, this applies to examiners as well as candidates.)

12. It requires no skill in asking extemporaneous questions on the part of the examiners. The topics for group discussion or individual presentation are carefully prepared in advance and the examiners as a group are familiar with what may be expected as reasonably adequate discussion content and what particular points to look for in each topic.

Family and Community Living

Vassar College, Poughkeepsie, N. Y., announces its 22nd Summer Institute for Family and Community Living, July 9–August 6.

As its name implies this is a family school for parents, teachers, and professional workers. It has facilities for 150 adults in its workshops and seminars and for 132 children in its children's school. Mary Fisher Langmuir, Professor of Child Study, is its director.

Baltimore's Community Rat Control Program*

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POPULAR demand for a reduction of the property damage and disease hazards caused by rats in residential communities, and a wartime need for extensive field tests with ANTU raticide have resulted in the development of an unusual type of program of rat control in Baltimore, Md. This program emphasizes suppressive measures as opposed to exclusion measures (rat-proofing), and is based on the fundamental premise that the rat population of a city block is essentially isolated so that it can be treated as an independent unit. Management of block programs including the execution of periodic eradication campaigns is, in most cases, handled by block residents themselves under the supervision of a central city organization. Business districts are treated as demands arise, but emphasis is placed on residential communities for which the system appears to be particularly applicable.

HISTORY AND SCOPE OF THE PROGRAM

About 200 residential blocks were used as a testing ground for new thiourea rat poisons by Dr. C. P. Richter in the fall of 1942.[1] Results in many instances were good and the recovery rates of the decimated rat population were unexpectedly slow. On the basis of these successes, the City of Baltimore undertook an ambitious city-wide program based on the block unit principle. An organization was set up in June, 1943, with a field crew of from 8 to 15 men, and about 1,877 city blocks were treated before the end of 1944. A system of volunteer inspectors was concurrently organized to report persistent infestations and reappearances in treated blocks, and to request follow-up treatments as needed. Many of the block campaigns completed during the period were highly successful; a few were unsuccessful.

Encouraged by a favorable public response, the work was reorganized as a Division of the Bureau of Street Cleaning on January 1, 1945. The program was continued in much the same manner as in 1944 except that new emphasis was placed on volunteer coöperators who were authorized to do the poisoning work in their home blocks after receiving appropriate instructions. By the end of 1945, 2,120 citizens had registered as volunteer workers in the program, and 4,160 city blocks had been treated one or more times with a total

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* A municipal enterprise supported by city appropriation and established in January, 1945, as a Division of Rodent Control in the Bureau of Street Cleaning. Research studies were conducted partly under a contract, recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and The Johns Hopkins University Medical School, and partly under a grant from the Rockefeller Foundation International Health Division to The Johns Hopkins University, School of Hygiene and Public Health.

† Contribution from the Rodent Ecology Research Project, Department of Parasitology, The Johns Hopkins University, School of Hygiene and Public Health, and The Psychobiological Laboratory, The Johns Hopkins Medical School.

of approximately 100,000 pounds of poisoned bait.

Special attention was given to repeat treatments during the first 6 months of 1946, but 964 new blocks were poisoned, raising the total of blocks treated to 5,574 out of about 6,800 in the city.

ENVIRONMENT

Baltimore is a thriving seaport city of 860,000 people, augmented during recent years by an additional 70,000 war workers. Residential structures in downtown areas are almost entirely row houses, two or three stories high, constructed of brick. Small, fenced back yards are usual, opening in the rear onto paved alleys which run through the center of each block and are used for collecting trash and garbage.

The rat population, all brown rats (*Rattus norvegicus*) except in a few waterfront buildings, averages about 75 per block in downtown residential areas.[2] This is believed to be roughly comparable with rat population levels in other cities along the North Atlantic Coast and in the Midwest. About three-fourths of the rats in residential areas live outdoors in yards, garages, and sheds, and one-fourth, indoors; very few rats are found in the sewers.

PLAN OF PROCEDURE

Areal Units

The adoption of an essentially isolated areal unit was found to be fundamental to successful rat control in Baltimore. Eradication jobs in single "open" buildings and in small, non-isolated sections of a block have given very incomplete and temporary relief and frequently have led to prejudices against baits among surviving rats, a condition which seriously complicates subsequent control efforts.

Experiments with marked rats have demonstrated the essentially isolated character of a city block, the area bounded by four city streets[3]; and experience gained in poisoning over 5,500 city blocks has indicated the adequacy of this unit for control operations.

In most cases a plan is followed for coördinating eradication campaigns in neighboring blocks so that sizeable tracts are covered in a single operation. This is largely a measure for convenience and efficiency, for there is no indication at present that isolated blocks recover or are reinvaded any more rapidly after treatment than grouped blocks.

Organizing Block Rat Control Programs

Since January, 1945, the program has emphasized the scheme of getting citizens to do the work themselves with instructions and materials furnished by the city. Blocks are organized for treatment by soliciting interest among residents or by persuading those people who write or telephone the city office for help that the solution to their personal problem with rats lies in a community program in their block.

Once a person has been found who will assume the responsibility of organizing a block team, mimeographed bulletins prepared by the city on "How to Organize and Practice Community Rat Control" and "Rat Control in Urban Residential Baltimore" are forwarded together with a petition form which may be filled out and returned, ordering the baiting materials and instructions necessary for staging a community campaign.

Upon receving a completed petition form, the city issues an identification card to the responsible leader who is designated as the "block captain." A community meeting may be scheduled and field demonstrations of eradication procedures are given by experienced city men before any work is undertaken.

Not all blocks are handled by volunteers. A city crew performs the work in cases of special urgency and in blocks where a local lack of public response has resulted in the leaving of heavy infestation spots in otherwise clean sections of the city.

Eradication Campaigns

The first activity of a block rat control team is the staging of an intensive eradication campaign through all buildings, yards, and lots in the block. This is done in a single operation. The steps of an eradication campaign are:

1. *Notification of block residents*—Residents are notified of a prospective campaign by means of placards which are posted in conspicuous places through the block and by notice cards which are distributed to all houses. The notices inform the residents of the intentions of the volunteer team and the mutual benefits which can be had through coöperation. They ask resident to clean up all exposed garbage, to leave their gates and outbuildings unlocked at a designated time and to confine their pets. At the same time they warn of the potential danger of the poison to unconfined pets and irresponsible children.

Requests to withhold poison from specified places are, of course, honored. Direct verbal permissions are sought whenever possible, but are not required. A city ordinance directing that properties shall be maintained free of rat infestation may be invoked in stubborn cases as needed.

2. *Distribution of poison bait*—Poison bait, generally ANTU at 3 per cent in finely ground corn,[3] is distributed one or two days after notification or as soon as weather conditions permit. Each registered worker takes a bucket of prepared bait, as supplied to a local headquarters by the city crew, and proceeds through the block from the alley, placing small spoonful-sized piles in exposed and protected sites around all real or potential harborage, food sources, runways, and trails in yards and buildings. From 10 to 50 piles may be placed in an infested property, and from 10 to 40 pounds of bait is commonly used in an average sized block. Thoroughness is emphasized as fundamental to success; and places which cannot be entered are listed for further inspection and attention.

Prebaiting with unpoisoned food for several days or weeks before poisoning, as recommended by various workers, was tried experimentally in sample blocks in Baltimore. Its value, as demonstrated in these tests, did not appear sufficient to warrant the adoption of a prebaiting procedure which would greatly increase and complicate the work of the volunteer coöperators.

3. *Check-up of results*—When ANTU baits are used rats will die during the two days following treatment. Counts of dead rats are made during these two days, and all signs such as rat holes and fresh droppings obliterated on the second or third day, in preparation for further checks on survivors. Residents are asked to sweep up and discard all dead rats and all uneaten bait. A report on the operation is then prepared by the block captain and submitted to the city office.

4. *Follow-up*—Eradication campaigns are followed up immediately with special measures at all sites of persisting infestation. City crews assist in this work with burrow fumigation and traps. (This phase of the work is, at present, inadequately done as a result of poor reporting and technical difficulties.)

5. *Repeat campaigns*—Complete eradication is rarely achieved in a campaign. Thus, repeat treatments are usually indicated once a year and sometimes more often.

Experience with campaigns in the Baltimore program is still limited. The repetition of ANTU-corn campaigns at yearly intervals has been successful, but repeat campaigns at shorter intervals have given some poor results, apparently as a result of bait refusal. The present policy is, therefore, to use ANTU-corn in overall block campaigns once a year, and other measures, such as burrow fumigation, trapping and poisons with alternate poisons and baits, in interim treatments, as needed.

Sanitation Program

Community sanitation, particularly garbage disposal, is regarded as an integral part of rat control in the Baltimore program. Volunteer rat control teams usually take considerable interest in correcting insanitary conditions in their blocks. As an aid in this work one or two sanitary inspectors are assigned to the Rodent Control Division by the Health Department, and sanitary inspector authorizations are given to a limited number of volunteer leaders. More than a thousand notices and several dozen summonses have been handed out in connection with rat control programs during 1945 and the first six months of 1946. As a result of these activities thousands of regulation garbage containers have been installed in treated blocks and hundreds of "unsanitary conditions" eliminated.

Ratproofing Program

Householders are encouraged and instructed in methods of repairing breaks and closing openings in their houses as a means of protecting their homes, breaking up the rat ranges within the block, and delaying reinfestation.

ADMINISTRATION OF PROGRAM

A small office force and field force are maintained by the city for the purpose of: (1) handling requests and complaints, (2) organizing volunteer groups, (3) supervising control operations, (4) preparing the delivering baiting materials, (5) giving demonstrations and talks to volunteer groups, (6) coördinating field programs, and (7) conducting eradication work in unorganized blocks. A budget of $44,000 served to run the program in 1945; the major items of expense were labor and baiting materials.

The coördination of volunteer programs is facilitated by a system of regional and district leaders. Following the pattern of Civilian Defense, the city is divided into ten districts, each placed under the direction of a volunteer "Chief Inspector." The subdivisions and the alignment of officers within a district vary according to the conditions and wishes of the local groups. District captains and their assistants do most of the work of organizing the coördinating block programs. A close coöperative arrangement is maintained between the city officials and the research departments of The Johns Hopkins University, where studies on rat ecology and rat control techniques are conducted.

RESULTS OBTAINED

The success of block eradication campaigns and of the overall program may be evaluated on the basis of: (1) public reaction, and (2) measured changes in the rat populations.

Public Reaction

Public reaction often gives an erroneous impression of the actual results obtained. It is, however, a measure of the popularity and hence the "health" of the program. Enthusiasm is generally proportional to the number of dead rats recovered rather than the percentage killed and, therefore, is greatest in warm weather when more rats die in places where they are readily found. There is some loss in enthusiasm in repeat campaigns which give poor kills even when the workers recognize that the small recovery may reflect a reduced capital population. Conspicuous failures, as they occasionally occur through faulty technique, are quite damaging to volunteer morale.

Volunteer leaders, taught to expect a 90 per cent reduction, reported their reactions as follows during 1945: Good, 178; Fair, 65; Poor, 48.

Block residents who took no part in the program were questioned in one group of blocks a year after the first poisoning campaign. Their reactions on the success of the campaign were as follows: Good, 73; Fair, 9; Poor, 3.

Measured Results

Measurements of the success of poisoning campaigns were obtained by making detailed surveys in sample blocks before and shortly after treatment.[4] A comparison of rat signs in these pre- and post-treatment surveys indicates that reductions of between 85 and 95 per cent are commonly obtained in residential blocks when the job is done thoroughly. Kills of from 50 to 80 per cent are encountered where the operators miss a few important yards or buildings, or where recent applications of poison have resulted in bait prejudices among local groups of rats. Heavy rains on the day of poisoning may result in a poor kill, and an inferior quality of corn has been responsible for some poor results during periods of grain shortage.

Periodic censuses following poisoning campaigns show that a decimated popu-

lation in a block will usually increase at a rate of between 2 and 6 per cent of the original population of the block per month.[5] Thus a population reduced to 10 per cent of its original level requires from 15 to 44 months to recover. The average block reaches 58 per cent in one year and will approach complete recovery in 22 months. Populations reduced to 5 per cent or less of the original level often show retarded or delayed recoveries, so that the total period required for recovery is considerably prolonged.

With these reductions and rates of recovery it is clear that repeat campaigns at yearly intervals can hold a rat population well below its saturation level. Where successive campaigns serve to reduce the population to the same point (about 10 per cent of the original level) each year, the average population curve will describe a course like that shown in Figure 1, and the number of rats present will never exceed about 58 per cent of the original population. Should each successive campaign succeed in removing 90 per cent of the rats present, the population can well be forced down to a level from which recovery is very slow and irregular or is delayed for an indefinite period (E in Figure 1). Special measures at such times may lead to complete extirpation. In one test block which was completely cleared of rats by persistent efforts, no rats reappeared for three years although neighboring blocks were moderately infested.[5]

Significance of Results

The value of control of the type here described is, of course, limited to the area treated and must be measured in terms of the local destructiveness of rats. Under most circumstances the destructive potentialities of a rat population are probably proportional to its size, and the benefits derived from a reduction campaign proportional to the reduction effected. Thus, in a block population under annual treatment, following the course shown in Figure 1, the total benefits may be appraised by measuring the area above the population line. In this case the benefits vary from 42 to 90 per cent and average 66 per cent throughout the year (C-D in Figure 1.) The greatest benefits may be realized by scheduling campaigns so that the lowest population levels coincide with the season of greatest local destructiveness or disease hazard, generally the summer.

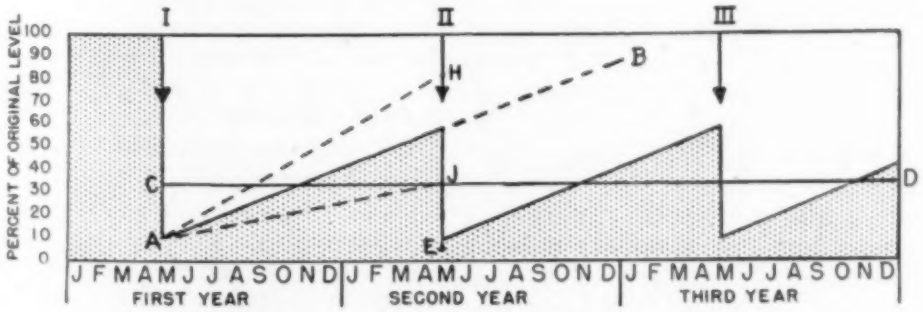

FIGURE 1—Fluctuations of a hypothetical (average) rat population subjected once a year to a thorough eradication campaign. The reductions effected by poisoning (vertical declines) and the slopes of recovery (sloping inclines) are based on actual measurements made on experimental block population in Baltimore. The line A-B represents an average recovery rate; A-H and A-J represent the extremes encountered in measurements in 23 sample blocks.

LIMITATIONS AND HAZARDS

Baltimore's program of rat control in residential communities as described in this report has a number of limitations which should be considered.

As with any type of suppression program, benefits can be measured only in short-term values. A number of improvements are believed to have been made over other types of suppression campaigns, but any long-term benefits must necessarily rest on continued public support. A serious accident resulting from misuse of poison or a few outstanding failures could greatly injure volunteer morale and thereby disrupt the whole program. Furthermore, it is a common attribute of human beings to drop their enthusiasm as soon as an unfavorable situation has been alleviated and before it has been eliminated.

After a series of comparative field tests, ANTU is still the only raticide considered effective and safe for this type of program.[4] ANTU is of little value against roof rats (*R. rattus*) which occur abundantly in many cities, particularly in the South. When properly used in Baltimore, ANTU gave excellent results against brown rats (*Rattus norvegicus*), but irregular usage has already led to a number of local complications and failures in repeat treatments. A widespread dissemination of ANTU to householders, now that all government restrictions have been lifted, might seriously reduce the effectiveness of ANTU campaigns against brown rats.

Hazards to humans and to pets seem to be relatively small in the type of program used in Baltimore. Every available source of information points to a high tolerance to ANTU by humans, but the potential dangers are still incompletely known. Ten children have been reported to have eaten ANTU baits since 1943; all but one had their stomachs emptied by stomach pump, and none showed any ill effects.

Cats, chickens, and rabbits are relatively resistant to ANTU poisoning, but dogs succumb to doses of as little as 50 mg. per kg.[6] Several dozen dogs, mostly vagrants, have been killed in the Baltimore program. This number is very small, however, when compared with the number of dogs exposed. Close coöperation between dog owners and poison crews minimizes the hazard to dogs, but occasional slips are hard to avoid.

The question of personal and property liability among volunteer workers poses a minor problem which in Baltimore is handled, as it was with air raid wardens, by assigning all responsibility to the volunteer.

SUMMARY

A procedure for rat control in residential communities has been developed in Baltimore, Md., on the basis of intensive local eradication campaigns repeated at appropriate intervals by volunteer residents under city direction. Four-fifths of the residential blocks of Baltimore have been treated one or more times in the eighteen months since the start of the full-fledged program in January, 1945.

All work is done on an areal unit basis, the square city block being the unit employed. ANTU in ground yellow corn is used as the standard poison bait. Community sanitation and ratproofing are encouraged in conjunction with the baiting campaigns.

Reductions of 85 to 95 per cent are generally obtained in well conducted block campaigns. Populations so decimated usually require from 15 to 44 months to recover to their original levels. Repeat campaigns once a year can thus hold a block population well below its original level and reduce the annual rat damage by about two-thirds.

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A.D.A. Council Rules on Bone Meal and Flourine Products

The Council on Dental Therapeutics of the American Dental Association, Chicago, has recently ruled that bone meal preparations for the prevention of dental decay are not acceptable to the Council.

It is pointed out that during recent months there have appeared on the market a number of preparations containing powdered cattle bone, supplemented with vitamin D, for the treatment and prevention of dental caries. In view of the lack of evidence to show that they are effective for this purpose, preparations of bone meal for the treatment of dental caries are declared not acceptable for inclusion in Accepted Dental Remedies.

The Council has also considered the role of fluorine in dental caries with special reference to synthetic fluoride tablets. It is pointed out that the mechanism through which fluorine produces a lowered caries attack rate is not known. In the opinion of the Council there is no evidence that the protective mechanism, whatever it is, can be effective through fluoride-bearing water supplies in persons after they have reached the age when the teeth are fully formed. It also has not been demonstrated that the ingestion of fluorine after the teeth are calcified will make the mechanism operative to arrest caries activity in man. They point out that, because of the great popular interest in the potential value of fluorine as an effective agent of caries control, there is ample opportunity for the exploitation of the public and of the professions through the sale of useless and even harmful preparations.

The Council has concluded with reference to many different tablet preparations containing some synthetic salt of fluorine and one or more vitamins, which recently have been offered that, though probably not dangerous in amounts recommended for daily consumption, fluoride added to diets already high in fluorine content or consumed in areas where water supplies contain significant concentrations of fluorine may constitute a health hazard. This possibility and the inconclusive nature of experimental evidence concerning their effectiveness render synthetic fluoride and fluoride-vitamin preparations for use in the treatment of dental caries not acceptable for inclusion in Accepted Dental Remedies at this time.

Determination of Filth and Extraneous Matter in Dairy Products*

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FILTH and other extraneous matter may enter into dairy products through insanitary and careless practices on the farm, in transit from farm to manufacturing establishment, and in the manufacturing plant itself. Any filth found in a food is not only repugnant in itself, but also is indicative of insanitary and improper conditions of production. Filth such as cow manure, rodent hairs, flies and other insects, fragments of feathers, and dirt may be found in dairy products. When such filth is found, it demonstrates conclusively that the dairy product was produced under insanitary conditions, and the type of contamination gives a clue to the nature of the objectionable condition. For example, a fly leg in cheese shows that the cheese or its components were not protected from flies during their production.

Two distinct operations are involved in all methods for the determination of filth and extraneous matter in dairy products. First the filth or other extraneous matter must be separated from the food itself. It should be noted at this point that while present methods are limited to separation of only the insoluble components of the filth, we are actively engaged in developing methods for separation of the milk soluble components of manure or insects from dairy products. Second, the character or identity and the amount of the extraneous matter must be determined by visual examination with or without the aid of microscopic techniques. Identification of the elements of filth requires experience and familiarity with the microscopic structure of hairs, insect particles, feathers, manure fragments, etc. The amount of filth may be measured by comparison with specimen sediment pads or the individual filth elements may be counted and the size measured.

It is rarely possible to separate completely the extraneous matter from the food substance itself. However, it is necessary that the separation be sufficiently complete to permit identification of the filth elements. There is no single method suitable for separating filth from all types of dairy products or even all samples of a given type of dairy product. For instance, filth in a sample of sweet cream can be removed by simple emulsification and filtration through a sediment disc. On the other hand, some samples of sour cream resist filtration to an extent requiring treatment of the sample by elaborate chemical methods in order to coax it through the sediment pad. Fresh milk usually can be filtered through a sediment pad with ease, but occasionally its physical condition is such that it becomes very difficult to filter.

Filth and sediment tests are a very useful tool both for the regulatory official and for the industry. However, it is important to note the limitations in interpreting the significance of such tests when negligible amounts of filth or

* Prestnted before the Laboratory Section of the American Public Health Association at the Seventy-fourth Annual Meeting in Cleveland, Ohio, November 13, 1946.

sediment are found. Such findings may merely indicate that efficient straining, filtering, or centrifugal clarification effectively removed the visible filth. Such devices, however, do not remedy the insanitary conditions responsible for the original contamination and cannot remove the soluble elements of filth.

Tests for filth and extraneous matter are most valuable tools for use in connection with sanitary inspections of dairy products manufacturing plants. During the inspection of a factory the inspector should not only make careful observations of the sanitary conditions of the plant itself, but he should employ field methods for making sediment tests on the milk or cream received by the plant from the producers. All too frequently even those dairy plants which are models of sanitation may accept and use milk or cream containing filth and extraneous matter.

MILK

The determination of filth and extraneous matter in milk provides a very valuable index to the quality of the milk not only to the inspector but also to the conscientious manufacturer. Such tests are simple and at the present time revealing. A negative test as previously pointed out may merely mean that the producer did a good job of filtering, but at the present time there is so high an incidence of positive tests in milk delivered for manufacturing purposes that the information furnished by such tests is very valuable. Sediment testing is no substitute for a comprehensive farm inspection program, but it does give a lead to the worst farms. Sediment testing by dairy plants should be performed systematically so that the milk from each producer is tested periodically. When dirty milk is revealed, it should be rejected on the spot and not used for production of dairy products for the market. The producer of rejected milk should be visited by a representative of the dairy plant in an attempt to correct objectionable practices on the farm. If these efforts fail, the farmer should be denied a market for his milk.

The Food and Drug Administration performs sediment tests at the time of every inspection of dairy plants using milk as a raw material. Bottom-can samples consisting of one pint of milk are collected and passed through a conventional sediment disc. Since large amounts of dirt and filth are uncovered by bottom-can sampling, the test becomes more sensitive than the mixed-can sample test. While the amount of sediment obtained from a bottom-can sample will vary, depending on whether the can of milk has been shaken or stirred, it does, under most conditions of use, reflect the degree of contamination more accurately than the mixed-can sample. Of great importance also is the fact that the bottom-can sample provides an amount of extraneous material sufficient for microscopic identification of the filth present in the milk.

In performing sediment tests, inspectors of the Food and Drug Administration seek to test a cross-section of the milk being received by the dairy plant. The test pads are suitably mounted for transmittal to the laboratory for examination and to provide a permanent record. The quantity of sediment is estimated by comparing the test pads with a photographic strip which pictures sediment pads prepared from milk containing known amounts of sediment measured in milligrams. The amount of sediment is recorded as 0, 0.5 mg., 3.0 mg., 6.0 mg., and 12.0 mg. In practice an instrument is used which removes approximately one pint of milk on the upstroke and filters it through the sediment pad on the downstroke. The Food and Drug Administration studies the sediment pads in connection with the inspector's report of sanitary conditions in the dairy plant. Regu-

latory action under the Food, Drug, and Cosmetic Act follows when dirty milk is being used or the plant is operating under insanitary conditions which may contaminate the product with filth.

During the period from March through September, 1946, inspectors of the Food and Drug Administration operating in the mid-continental part of the United States made tests on 272 lots of milk delivered to cheese factories. Forty to 175 cans of milk were sampled in each test, the average being 69 cans; 19,811 cans were examined in all.

The results of each test were recorded as the percentage of the milk containing 0, 0.5 mg., 3.0 mg., 6.0 mg., and 12.0 mg. of sediment. We are confining our discussion of these tests to the milk showing 3.0 mg., 6.0 mg., and 12.0 mg. of sediment since this amount represents a significant quantity of filth and extraneous material. A cross-section of the sediment pads from each test was examined microscopically in the laboratory and the identity of the filth was determined. Generally the sediment consisted of cow manure, various kinds of hair, insects and insect parts, feather fragments, dirt, rust, metal particles, etc.

Table 1 summarizes the data obtained from the 272 inspections. The table lists the number of these inspections broken down in terms of the percentage of such filthy milk in the total cans examined at each inspection. For example, the column under the heading 3.0 mg. shows that none of the 272 tests revealed a complete absence of 3.0 mg. milk, that 26 of the tests yielded from 1 per cent to 9 per cent of 3.0 mg. milk, and that 42 of the tests yielded from 10 per cent to 19 per cent, etc. Similar data are shown for the 6.0 mg. and 12.0 mg. milk.

Table 1 reveals the significant fact that 199 inspections out of the 272 (or 73 per cent of the total) showed some milk yielding 12.0 mg. pads when tested by the bottom-can sampling method. It

TABLE 1

Sanitary Classification of Milk Delivered to Cheese Factories, Spring and Summer, 1946

A. As to incidence of 3 mg. pads

Percentage of Pads Among Total Cans Tested	*Number of Inspections*
No 3 mg. pads at all	0
1% through 9% 3 mg. pads	26
10% " 19% 3 mg. pads	42
20% " 29% 3 mg. pads	78
30% " 39% 3 mg. pads	72
40% " 49% 3 mg. pads	41
50% or more 3 mg. pads	13

B. As to incidence of 6 mg. pads

No 6 mg. pads at all	26
1% through 9% 6 mg. pads	127
10% " 19% 6 mg. pads	78
20% " 29% 6 mg. pads	21
30% " 39% 6 mg. pads	13
40% " 49% 6 mg. pads	5
50% or more 6 mg. pads	2

C. As to incidence of 12 mg. pads

No 12 mg. pads at all	73
1% through 9% 12 mg. pads	148
10% " 19% 12 mg. pads	36
20% " 29% 12 mg. pads	13
30% " 39% 12 mg. pads	0
40% " 49% 12 mg. pads	2
50% or more 12 mg. pads	0

is interesting to note that of the grand total of 19,811 cans of milk examined, 28 per cent showed sediment to the extent of 3.0 mg., 11 per cent to the extent of 6.0 mg., and 6 per cent to the extent of 12.0 mg.

To furnish information about individual tests, the results of a number of representative tests showing a minimum amount of sediment, average sediment, and heavy sediment have been detailed in Table 2. These tests were selected

TABLE 2

Typical Tests on Cheese Milk

Date of Inspection	*No. Cans Tested*	*Per cent of Milk Showing Pads*		
		3.0 mg.	*6.0 mg.*	*12.0 mg.*
4/17/46	100	12	1	0
4/ 9/46	50	14	0	0
5/20/46	50	30	8	0
2/ 6/46	42	7	2	1
8/31/46	65	48	6	7
8/ 3/46	87	37	17	10
4/ 7/46	137	28	20	3
4/29/46	90	32	17	26
6/17/46	100	39	27	14
8/23/46	60	19	19	74
5/15/46	100	37	30	70
3/18/46	112	30	7	43

from the 272 described in Table 1 in such a manner that they present a picture approximately the same as the results of all of the 272 tests.

OTHER DAIRY PRODUCTS

While sediment tests on milk are made by a very simple technique not involving chemical treatment of the sample, this simple procedure is not generally applicable to other dairy products.

The methods for most other dairy products involve chemical treatment of the sample to facilitate filtration through a sediment pad or filter paper. The methods used on cream for butter making can be performed in the field, but require the inspector to carry with him chemical reagents and equipment for treating the sample. A vacuum pump is necessary. A small proportion of cream samples can be filtered through a sediment pad merely by diluting the cream with hot water. After treatment with hot water, even old cream can be filtered through a coarser medium, but a filtering medium permitting filtration in this manner will not retain the fine particles of sediment. It does retain significant filth elements such as insect parts, and some rodent hairs. Generally, to facilitate filtration of cream through pads, caustic soda is used to neutralize the excess acidity and sodium metaphosphate solution to assist in emulsification. After such treatment the liquid usually will pass through the conventional sediment pad.

Some creams, particularly those containing a considerable amount of mold, will not filter even after treatment with sodium hydroxide and sodium metaphosphate solution. With such creams it is necessary to sacrifice the complete recovery of filth by filtering through a coarser medium or separating the heavy filth by drawing off a part of the material from a separatory funnel and treatment of the remainder by entrapment in a Wildman trap. The Wildman trap is used for the detection of filth in a wide variety of substances. It consists of a one or two liter Erlenmeyer flask fitted with a rubber stopper attached to the end of a rod which is inserted bottom side up into the flask. When the rubber stopper is brought to the neck of the flask it forms a seal. The material in the flash suspended in water or other liquids is throughly shaken with a small amount of gasoline or other oily material. The particles of gasoline attach themselves to the filth substances and bring them to the top of the liquid. The gasoline layer together with a small part of the aqueous layer is poured off after trapping in the neck and is filtered. The residue of filth and extraneous matter on the filter is then available for microscopic examination.

Smaller amounts of filth and extraneous matter are usually found in cream than in the milk from which it is separated, since there is a tendency for elements of filth to follow the skim milk rather than the cream through the separator. However, since cream is held longer on the farm and is manipulated as it passes through the cream station to the creamery, it is particularly subject to contamination after separation. The microscopic examination of the sediment pad is most important when dealing with cream. Microscopic examination of cream pads sometimes reveals small maggots resulting from fly contamination, as well as other filth elements.

Recently developed methods are now available for separation of filth and extraneous matter from a number of finished dairy products such as cheese, dried milk, evaporated milk, and butter. Two general principals are involved in these methods. The first class of methods embraces products which can be emulsified by chemical treatment with or without digestion with pancreatin. The emulsified sample for quantitative estimation of filth is filtered through

paper. The second class of methods involves sedimentation and the use of the Wildman trap described above. It should be reëmphasized that there is no universal method for all dairy products and diversified methods are frequently applied to the same type of dairy product. The method of choice for a particular sample is the one which minimizes the damage to the filth present and which results in near quantitative recovery of the filth. At times these two objectives are not completely compatible, and it becomes necessary either to sacrifice complete recovery or to endanger the filth elements present.

The separation of filth or extraneous matter from finished dairy products is futile unless the identity of the elements of filth is established by microscopic examination. While this phase of the determination is also important in raw materials such as milk and cream, it is fundamental to proper interpretation of filth analyses on finished products. When large amounts and impressive types of filth are found in dairy products the determination speaks for itself and there is little need for additional evidence to support the conclusion that the product is filthy. However, it is more usual that the sample reveals very small amounts of filth, since practically all dairy products manufacturers strain or filter their raw material, and in these circumstances it is valuable to use additional data in interpreting the results. In interpreting the significance of a filth analysis, we should study not only the results on the particular sample involved, but all other samples from the same source together with sediment tests of the raw material and the report of the sanitary inspection of the place of manufacture.

Details of methods of analysis have not been given in the above discussion since many of the methods discussed have been published in the book of *Methods of the Association of Official Agricultural Chemists*. These methods will also be published in the forthcoming edition of the American Public Health Association Methods.

The Food and Drug Administration has extensively used the methods described above in the enforcement of the Food and Drugs Act. The use of these methods in connection with factory investigations has furnished evidence to support an extensive regulatory program. Many seizures, prosecutions, and injunctions based on the application of sediment tests to both raw materials and finished products have been brought to a successful conclusion. In presenting such evidence to the courts, it is frequently valuable to prepare exhibits of filthy substances found in the food for presentation to the court. Milk and cream sediment pads are particularly valuable exhibits.

SUMMARY

1. Filth and extraneous matter in milk can be determined easily in the field, and at the present time such tests are widely used both by the industry and regulatory officials on milk for use in manufactured products.

2. Two hundred and seventy-two recent tests performed by inspectors of the Food and Drug Administration show that considerable quantities of milk containing large amounts of filth are received by cheese factories.

3. Sediment test methods for cream used in butter making are available for use in the field and in the laboratory.

4. Methods have been developed for the determination of filth and extraneous matter in cheese, evaporated milk, skim milk powder, etc. These are laboratory methods designed for use on finished dairy products.

5. The microscopic identification of filth elements is a very important part of any determination of filth and extraneous matter in dairy products.

The Medical Social Worker in a County Health Department

A Coöperative Plan Between a Health and Welfare Department

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OFFICIAL health and welfare departments frequently face mutual problems and responsibilities. Their recognition and an approach to their solution by utilizing the combined abilities and interests of the professionally trained personnel of both organizations would seem to be a desirable way of bringing increased service to the community. This is especially true in applying the services of medical social workers, whose contribution to the success of health department programs is just beginning to be appreciated. We propose to tell how, in one county, coöperative functional planning has resulted in a better working relationship and greater accomplishment.

DESCRIPTIVE

Kitsap County, in the State of Washington, covers an area of 394 square miles bordering on Puget Sound. Although there is some fishing, lumbering, and dairy farming, the economic life of this area centers around the Puget Sound Naval Base, a major installation located in Bremerton, the largest city in the county. As a result of war activities, the population of the county rose rapidly from the 1940 census of 35,000 to the present estimate of 160,000. Within Bremerton are concentrated at least 75,000 persons, a growth from 15,000. This population is predominantly white except for about 5,000 Negroes and 500 Indians; it represents an influx from almost every part of the country.

THE HEALTH DEPARTMENT

The Health Department, functioning jointly for both city and county, was established as a full-time unit in 1941. Since 1943 it has been housed in the Franklin D. Roosevelt Memorial Hospital in Bremerton, a community hospital built with Lanham Act Funds and sponsored by the County Board of Commissioners. Because of its intimate physical relationship with the hospital, planned from the very beginning, the Health Department enjoys adequate facilities including use of the laboratory and x-ray equipment.

The Division of Sanitation enforces city and county regulations, including milk and restaurant codes based on U. S. Public Health Service standard codes, as well as adequate sewage and plumbing ordinances. It supervises sanitation of schools, houses of refuge, and convalescent homes.

The Division of Nursing conducts a generalized public health nursing program, including some bedside nursing. This was instituted in 1943 to meet some of the needs of an overcrowded

population and a relative shortage of practising physicians and nurses.

Regular tuberculosis, venereal disease, and orthopedic clinics are conducted at the Health Department. Immunization clinics are held periodically throughout the county, as are a few "mother-nurse" conference groups, in limited areas.

THE WELFARE DEPARTMENT

The State Department of Public Welfare was created by a Legislative Act in 1935. It is responsible for administering and supervising all programs through local county welfare departments. The Divisions for Children, Old Age Assistance, Assistance for the Blind, and General Assistance were established by law. The medical care program thus far has not been separately established by law.

County welfare departments are responsible for administering the total program in their respective communities. The Kitsap County Welfare Department functions under an Administrator with a staff of 17 professional and 7 clerical workers. It is the only county in the State of Washington which has medical-social workers on the staff. The medical-social work program as it functions with the Health Department is also unique.

Until January, 1943, the local health department was administratively part of the Welfare Department. This involved chiefly budgetary control and accounting practices. Tuberculosis hospitalization was also a Welfare Department responsibility. As a result of acts of the State Legislature, the two departments became completely separated and tuberculosis control and hospitalization was transferred to the Health Department. Medical care of relief recipients continues to be a Welfare Department program.

A medical-social worker was assigned to the Kitsap County Welfare Department in December, 1943, to work with the medical care program. Her first assignment included development of medical-social service within the community, hospital admissions, and nursing home placements. Early in 1944, the County Public Health Director asked that medical case work services be made available to female patients of the venereal disease clinic and to tuberculosis patients.

In the early planning of this program it was recognized that medical case work service to such special groups, given by a welfare worker in a Health Department clinic setting, gave opportunity for a fresh method of approach. But it was agreed that continued service would depend upon the need for case work services evidenced by the patients as well as upon the recognition of the value of such service by the Health Department workers involved. Consultation with a medical-social worker was to be on a selective referral basis. Although the interests of the Health and Welfare Departments touch at many points, the chief areas of function of the medical-social worker in relation to the Health Department program have been centered about tuberculosis, venereal disease control, and orthopedic services.

VENEREAL DISEASE CONTROL

Two clinics a week are held at the Health Department offices for the diagnosis and treatment of venereal diseases. Patients come in through contact investigation, by direct application, upon referral of private physicians, and through the activities of public health nurses. There is no charge.

The venereal disease patients are seen by a medical-social worker after their clinic visit in a private interviewing room near the examination rooms. Facilities for privacy are adequate and the patient is given any length of time he wishes to discuss the problem involved. In the venereal disease clinic it

has been the practice to see women patients generally in the younger age group; that is, under the age of 25 years. Referrals are made by the physician or the clinic supervisor of nurses who has responsibility for interviewing patients and recording medical history. The majority of the group have been found to have problems with which they desire medical case work assistance and are carried on a case work basis as long as a need seems indicated.

Experience in the venereal disease clinic has shown invaluable opportunities for helping the patient confronted with the adjustment involved in venereal disease and its treatment. The patients showed varying degrees of guilt, and have considered it a moral problem in many instances, with a tendency toward self-blame. The emotional element often has been so intense that, without case work services, there might have been serious personality conflicts.

The majority of the 87 patients seen were comparatively new to the community and had come for wartime employment. Financial problems were almost nonexistent. While some of the group were unmarried, more were married, divorced, or separated. Of the group that was married, most had husbands in the service. Few housewives or students were represented, most of the girls being employed as waitresses or in the Puget Sound Navy Yard as war workers. Approximately one-fourth of the group had an eighth grade education or less. Thirteen were high school graduates and only three had any collegiate training. The largest number was concentrated in the age group between 19 and 24 years, although the age range was from 13 to 55 years. Fewer than one-fourth of the patients were of other than the white race. Most were from the mid-western states and had come from rural areas. The paramount problem centered around anxiety and guilt feelings related to their venereal infection. As a group, they did not have meaningful family relationships and generally showed emotional immaturity.

In analyzing case work contributions, it is felt that the patients on a whole needed help. They seemed poorly prepared, however, either by life or experience to use any help. Promiscuity and sophistication served as a protection hard to break through. In establishing a meaningful relationship, the case worker has to meet the requests for tangible help and prove to the patient an interest in him as a person. It is believed that case work treatment cannot change to a marked degree the underlying conflicts in the patient, but by meeting dependency needs, accepting him as an individual, and giving support to his ego, he can be helped to function with less difficulty in his relationships with other people.

TUBERCULOSIS CONTROL

A chest clinic for the diagnosis and treatment of tuberculosis is held once a week at the offices of the Health Department. Medical services are given by a tuberculosis consultant. Patients and contacts are referred by private physicians, public health nurses, and as a result of an extensive miniature chest x-ray survey conducted jointly by the Health Department and the Tuberculosis League. In addition, a large proportion of the chest x-rays taken by private physicians are referred to the consultant for interpretation. The county maintains a 50 bed tuberculosis sanatorium under the administration of the Health Officer.

Each patient who is diagnosed as having active tuberculosis is referred to the medical social worker. This affords the patient an opportunity to express his feelings concerning the physician's diagnosis and recommendations. Frequently the patient is so upset emotionally that he finds it difficult to accept the treatment plan. He may resist

treatment for many reasons, but particularly because of concern about responsibilities for his family.

The medical-social worker attempts to relieve him of some of the anxiety and encourages him to talk about his attitude toward his illness so that she may determine the factors which to him appear paramount. If it is evident that the patient is confused in the medical interpretation given by the physician, the social worker usually requests the public health nurse or the physician to talk further with him to clarify his thinking.

The medical-social worker uses the first interview to explain in detail the services available for his care. She learns something of his financial ability to meet the medical needs for himself and also to provide for his family. It is always carefully explained to the patient that there are resources to meet his needs. When he leaves her office he has all the assurance that adequate assistance is available. If sanatorium care is indicated, she prepares him for his experience there, explaining visiting hours, what he will need in clothing, mentioning the occupational therapy and recreational facilities.

Financial planning with the patient is important, since the patients are accepted as free, part-pay, or private patients for sanatorium care. The problems confronting the tuberculous patient are much the same as those confronting any patient in need of long care away from the home. Needs presented often include foster home placement of children, or some form of public assistance for dependents.

Those patients showing a need for continued case work services are seen in the County Sanatorium by the same worker who sees them in clinic. She attempts to obtain sufficient information from the patient and other members of his family to get a rather complete picture of the patient as a person. Any social problems which are revealed in securing the social study, particularly those that may aggravate the patient's condition, are alleviated as far as possible. In addition, she works with the patient's family to give them understanding regarding the patient's anxiety, and explains the important part that the family's attitude plays in his recovery. The medical-social worker's goal is to give as much supportive assistance as possible in an effort to help the patient make mental and emotional adjustments, thereby hastening his recovery.

To effect continuity in the treatment plan, the social worker shares with the medical and nursing staff the social problems which are a concern to the patient and his progress in social adjustment.

Lines of responsibility have been fairly well delineated. The public health nurse assumes responsibility when the major problem is health, such as contact follow-up and case finding. The medical-social worker offers case work services to the patients in the clinic, the home and in the sanatorium.

ORTHOPEDIC SERVICES

In April, 1941, service for crippled children was transferred from the State Department of Social Security to the State Department of Health with the understanding that the county welfare departments would do the social studies for the health departments. The State Department of Health has been conducting diagnostic clinics and providing for orthopedic care for certain children coming under the Crippled Children's Program. These clinics have been held several times a year in Seattle.

After the child has been examined by an orthopedic physician at a diagnostic clinic and treatment is recommended, the County Health Officer is notified by the State Department of Health of those children who are in need of treatment. A medical-social worker then

makes a social study based on information secured during a home visit. This is forwarded to the medical-social worker in the State Department of Health. This material is used by her in case work services with the child during his hospitalization period. After the child returns home, the medical-social worker and public health nurse continue working with him and his family in an effort to assist with any medical-social problems or nursing problems relating to the child's orthopedic condition.

Within the past few months an orthopedic clinic has been established in the County Health Department through the joint coöperation of the Health Department, the local chapter of the Poliomyelitis Foundation, and the County Medical Society. Consultant orthopedists from Seattle visit this clinic. All age groups are seen. Patients under 21 coming under the Crippled Children's Program and cases of poliomyelitis are seen free of charge. Private patients are also referred by practising physicians on a private fee-for-service basis. The Medical Director has requested the services of a medical-social worker in this clinic.

CHILD HEALTH

Mutual problems within the field of child health arise in connection with examination for placement in foster homes and supervision of the sanitation of these homes. The services of the Health Department sanitarians are available at the request of the social worker in investigating the environment before placement of these children.

ADMINISTRATION

Programs involving joint action are planned jointly by the administrators of the two departments or by their designated associates. Thought is given at the very beginning of the planning of any new program to the clarification of any overlapping administrative responsibility. The function of the medical-social worker is carefully delineated. From there on supervision of the worker is provided by the Welfare Department supervisor. At the same time, the worker, while she participates in the joint program, has a definite responsibility to the Health Department director for medical interpretation in the individual case. She represents the Health Department to the patient until such time as a problem indicating Welfare Department responsibility enters into the picture. The patient or his family is seen by the case worker at the Health Department offices or the sanatorium.

An active program of staff education has been necessary in order to correlate the activities of the Welfare and Health Departments. Joint staff conferences of nurses, sanitarians, and medical-social workers have been found effective. Reciprocal orientation of new staff members of each department to the activities of the other has now become a routine procedure. The working relationship of the individual public health nurse and medical-social worker has been considerably strengthened so that each now avails herself more frequently of the services of the other.

The Health Department, which maintains student nurse affiliation, has included as part of the experience of the student nurse the various aspects of this interrelationship between the two departments, both through formal seminars with Welfare Department supervisors and by direct observation and participation. A medical-social worker has been asked to give a one hour class for each group of students, showing the working relationship between the public health nurse and the medical-social worker in the public health clinic. These classes have proved very interesting and informative for us and we hope for the student nurses. These students

come to the class oriented in the understanding of the function of the medical-social worker in a hospital. The problem is one of relating this information to the work in the public health clinic. It is sometimes a little difficult at first for them to visualize the medical-social worker attached to the County Welfare Department, giving case work services outside of the hospital. Brief illustrative case material has been helpful in making the interpretation to the student nurses and the hour has usually ended with the nurses thinking of patients in their own field work case load who might profit by the medical case work service.

PUBLIC RELATIONSHIP AND ATTITUDE

The services of the social worker have been accepted as part of the services offered by the Health Department to the patient. This was not always true when the worker was introduced as a member of the Welfare Department and interviewing was done at the Welfare Department offices. The medical profession, too, is accepting the role of the medical-social worker. This is especially true in connection with problems presented by tuberculosis control. It is becoming progressively more apparent, however, in other fields of medical interests. For example, in drawing up a plan for a definite understanding between the Medical Society and the Health Department in relation to the activities of the venereal disease clinic, the medical-social worker was included.

CONCLUSION

The joint program was initiated on an experimental basis over two years ago, and results have been so gratifying that it is now fully accepted by both departments. They are deriving mutual benefit and satisfaction in meeting social and medical problems in the community together.

The County Welfare Department realizes that this joint sharing of community responsibility with the Health Department has had definite value in developing its medical-social program. It has provided an opportunity for its medical-social workers to work directly with the County Health Director and have the benefit of his medical supervision in the venereal disease clinic, and with the chest consultant in the sanatorium and tuberculosis clinic. This has broadened their experience and assisted in their professional development. Thus the medical-social worker and the nursing staff have a much deeper appreciation and respect for each other's profession. This could not have been accomplished except through day by day working relationship, each making an effort to understand the function of the other.

A review of the joint program leads to the conclusion that both departments have gained by the close working relationship. The Health Department has had placed at its disposal the services of trained medical case workers and has thereby been able to incorporate into its program consideration of the social side of disease and of public health problems.

Equally important, it has drawn the staffs of the two departments more closely together so that each has a better understanding of what the other professional worker is trying to do. Coöperative solution of joint problems is no longer a theoretical ideal. Through closer working with the medical staff, the social worker is better able to appreciate the social needs in relationship to the medical needs and, because referral to her is immediate, to take immediate steps to meet these needs. The Health Department and the medical profession are coming to recognize the case worker as a person whose functions go far beyond financial clearance.

Health and Social Statistics for the City*

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FOR the last two years, Esther Wright of the staff of the National Office of Vital Statistics has been devoting full time to the program of small area statistics in cities. The plan of operation has been to assist in every way possible Howard Whipple Green of Cleveland, W. Thurber Fales of Baltimore, and Leon Truesdell of the Bureau of the Census to reduce to writing and graphic form their extensive "know-how" in this subject. This should make it possible for other workers to benefit from their experience and to carry on this important activity in the other large cities of the country. With the reissuance of the *Census Tract Manual*, which I understand will soon be available, and with the completion of various other materials and exhibits, this phase of the program will soon be an accomplished fact.

During these last two years, I have been questioned many times why vital statistics was interested in this work. "What has it got to do with vital registration?" "How will it aid the tuberculosis program?" "Why are vital statistics consultants surveying the present use of census tracts in various cities?" "Why are they approaching businessmen concerning their need for census tract data?"

The answer to all such questions is a very simple one. We are interested in people. By this, I do not mean an interest focused primarily on people as cases of tuberculosis or syphilis or heart disease; or an interest in families as social welfare problems or as potential trade customers; or an interest in youth as juvenile delinquents. What is meant is that we have an interest in people and in families as such—in their characteristics—in the way they are distributed throughout the city. We realize that the vital statistics we publish will always have a limited usefulness and significance unless they are related closely to the way people live, to the kind of jobs they have, and to the problems they face.

A basic statistical knowledge concerning the people themselves should underlie all subject-matter programs. Yet in many, many instances, programs are devised which are faulty because of insufficient knowledge concerning the people at whom they are directed. For example, schools have sometimes been placed where there are not enough children to use them; cities have occasionally laid out development plans without an awareness of the degree of population growth to be anticipated; businesses have charted their future courses at times without taking into account the supply of workers which they need or the potential customer market. Even world-wide problems such as those involving labor supply and job opportuni-

* Presented before the Vital Statistics Section of the American Public Health Association at the Seventy-fourth Annual Meeting in Cleveland, Ohio, November 13, 1946.

ties, food resources, immigration controls, and numerous others have had to be acted upon without sufficient knowledge of population factors. Perhaps a hopeful sign for the future is the recent clear-cut recognition by the Social and Economic Council of the United Nations that a Population Commission is necessary to cope with just such deficiencies.

Up to the present time, the primary national interests in demographic or population analysis have centered in universities or foundation supported organizations. Scripps, Princeton, Milbank, Hopkins—these are the names that come to mind. The Bureau of the Census has, of necessity, devoted most of its energies to the obtaining of population data rather than to the analysis of these data. National, state, and city planning commissions, though usually inadequately financed, have made a beginning. Little has been done by the state health departments or vital statistics units in the field of population analysis. A few counties have shown interest.

When it comes to cities, however, all of us recognize two in particular which have a clear-cut focus of population data. They are Cleveland and Baltimore. It is due to the efforts of Howard Whipple Green and W. Thurber Fales that we are primarily indebted for the brilliant pioneer work which has set examples of what can be done. In addition, Birmingham, Chicago, Cincinnati, Detroit, Los Angeles, Milwaukee, New York, Pittsburgh, and several other cities have made considerable progress along these lines.

The technique of creating a focus for population facts in large cities has been simplified by the existence of population data tabulated in census tracts. Census tracts are small areas into which large cities are divided. Data collected by the Bureau of the Census are tabulated by these small areas. They have definite and permanent boundaries. Each tract includes a population of between 3,000 and 6,000. It is fairly homogeneous with respect to race, nativity, economic status, and general living conditions.

In general, all population items were tabulated by race and nativity and housing items, by occupancy and tenure and color of occupants, wherever applicable. This is true of both published and unpublished tabulations. Tabulated but unpublished items for census tracts include: nativity of minor races, school attendance, industry groups of employed workers 14 years old and over, exterior material of residential structures, number of rooms of dwelling units, lighting equipment, cooking fuel, water supply, bath, tub or shower, furniture, and rent.

In 1940, census tract data were made available for 60 of the larger cities of the country. The existence of population tabulations by census tracts means that a reasonably complete knowledge of the people and families in a large city can be obtained by summarizing and coördinating all such facts for a few score census tracts and by keeping these facts *up to date*. Vital statistics is an important part of this task since the current allocation to these tracts of births, deaths, marriages, and divorces is needed to revise the once-in-ten-year census population picture throughout the interim census period.

City health departments, like other city agencies, have two basic uses of census tract data: (1) health statistics compiled on a census tract basis serve to show the geographical distribution of health problems; and (2) health statistics compiled on a census tract basis may be related to other social and economic factors available by census tract. Both of these uses are sometimes expressed in the larger health area units by reassembling the census tract data.

In recent years, public health administrators generally have adopted the philosophy that public health programs

are best administered in large cities through a neighborhood health center plan. These health centers are usually the administrative units of health areas. Generally, a health center area is designed to include a population of approximately 25,000. The health area boundaries should be contiguous with census tract boundaries. Data may be tabulated by tracts and data summarized by health areas.

Homogeneity in population characteristics is difficult to maintain in a population grouping of 25,000 or more persons. It may frequently happen that a particular health problem will exist in only one small section of a health area or it may happen that a health problem will arise in two contiguous census tracts which are in different health areas and thus require the coöperation of the two health officers concerned. Finally, it should be noted that population and housing data can be compiled for health areas only if the health area represents combinations of census tracts for which census data are available.

A second problem of administration lies in obtaining citizen participation in health programs. It is very difficult to get all the city interested in a problem localized in only one section of the city. It is relatively easy, however, to obtain community interest and action on problems affecting each small community. This, of course, is one of the reasons for establishing community health centers, but it must be remembered that it is possible to compile all the pertinent data for the community only if the community is a grouping of census tracts. It should also be emphasized that a health area embracing a small number of census tracts is much more apt to have a fairly homogeneous population with common interests than a health area drawn with no reference to base population data.

Spotting births, deaths, communicable disease cases, and nurses' visits on a tract map shows the health administrator where his "business" is. Mothers' classes should be organized in areas where births are most frequent. Special classes and special preventive measures should be taken in areas where stillbirths and infant deaths predominate. Well baby clinics should be located in the areas where the babies live. Venereal disease and tuberculosis clinics should be located in the areas where venereal disease and tuberculosis cases are clustered most. Similarly, public health education programs on venereal disease and tuberculosis should be stressed in these areas. Special preventive measures should be taken in areas where certain other communicable diseases occur. Accident prevention programs should be stressed in areas where accidents occur and areas where persons who are involved in accidents reside. Out-patient hospital clinics should be located in areas where the people who use them reside. Nurses' areas should be designed according to the distribution of demand for nurses' services. Housing inspections and inspections of food establishments are presumably made on a city-wide basis. It is a good idea to design inspectors' areas by census tracts and to keep inspection records on this basis. "Problem areas" may be easily spotted and special attention can be given these areas.

There are other possible uses but each should be studied carefully. Prenatal clinics, for example, might be established in areas where births predominate. Certainly a study of population trends and an analysis of births by residence should be one factor in the considerations of selecting sites for such clinics. On the other hand, it may be necessary to install such clinics where hospital facilities already exist. Similarly, facilities for the care of crippled children should be established where the greatest number of persons needing such

care live, but the location of existing facilities will probably be the final determining factor.

As important as it is to have information on the geographic distribution of health problems, it is equally important to be able to relate health phenomena with other social and economic conditions. This can be done by analyzing health data on a census tract basis. As previously stated, census tracts are designed to include relatively homogeneous populations of approximately 5,000 persons. A wealth of data on age, race, nativity, sex, education, employment, housing conditions, and economic status are available for each tract from the federal census. Locally collected data on housing, recreation, juvenile delinquency, school attendance, and so on may also be compiled on a census tract basis. It is a truism that two widely separated tracts having the same living conditions represent more of a community of interest than two contiguous tracts widely different in economic status.

The Committee on Census Enumeration Areas of the American Statistical Association has illustrated as scientific exhibits two of the uses of tabulations of data by census tract.

The first exhibit demonstrates the low ratio of toxoid inoculations to births in Baltimore. By means of this knowledge, the city health department was able to concentrate its efforts on an intensive immunization campaign. The second exhibit sets forth the relation between health and economic factors in Cleveland.

One more use of census tracts should be noted. Census tracts provide an excellent base for sampling. Census tract data also provide sufficiently detailed information for small population groups to form a basis for selecting small areas having specified characteristics for intensive study.

It is not necessary to make frequent elaborate tabulations by census tract. In fact, such a procedure should be avoided since tract tabulations might then become an unnecessary burden on the health department and eventually be dropped altogether for this reason. Certain basic records should be routinely coded by tracts. These include births, deaths, stillbirths, communicable disease cases, nurses' visits, and residence of persons attending various clinics.

Monthly tabulations of total births, deaths, stillbirths, and communicable disease cases should be made by tracts but it is probably unnecessary to make any detailed tabulations this frequently. More detailed tabulations should be made annually. These might include births by race, total stillbirths by race, total deaths by race and age (5 age groups only). Deaths from selected causes should also be tabulated by race, sex, and age. These causes should include the ten leading causes and any others in which there is special interest. A tentative suggestive list includes tuberculosis, pneumonia, diseases of the circulatory system, cancer, diabetes, nephritis, cerebral hemorrhage, accidents, meningococcus meningitis, poliomyelitis, rheumatic fever, maternal deaths, and, of course, infant deaths. Reported cases of certain communicable diseases should also be tabulated by race, age, and sex. Nurses' visits should be tabulated by type of case and type of service. Clinic visits should also be available by type of case and race. More detailed tabulations than these should be made only for special studies. It is important, however, that all records which might be analyzed by tracts should be routinely coded by tract. This coding operation takes very little time if done regularly, and punching tract identification along with other information also adds little to the regular work.

Before closing, I should like to point out that the staff of the National Office

of Vital Statistics fully recognizes the fact that a focus of population statistics in the large city can be created in other types of organizations than in city health departments. There is no doubt in my own mind, however, that the best focus for such a population register will usually be found to be the vital statistics section of the city health department. This conclusion is based primarily on the consideration that such a population focus needs: (1) an office staff with knowledge and skills in indexing, coding, and statistical analysis, (2) a budget sufficient to furnish freely the population statistical services to organizations needing them, and (3) an adaptation of the current flow of vital records for the purpose of keeping the population register up to date. Likewise, it is my opinion that both the health and vital statistics responsibilities of the city health office can be met more adequately by such a development.

The future program of the National Office of Vital Statistics includes promotion of the establishment of population registers in all of the large cities of the country. In coöperation with the Bureau of the Census, the state health offices, and other interested organizations and individuals, we hope to implement this program through training and demonstration projects.

Public Health Coöperation in Student Nurse Recruitment Program

The Student Nurse Recruitment Program for enrolling 45,000 student nurses in the nation's 1,300 schools of nursing in 1947, being conducted by the American Hospital Association, the Advertising Council, Inc., the American Red Cross, and national nursing organizations, was briefly outlined in the May *Journal*, page 630.

The campaign stresses positive aspects of nursing—the hundreds of interesting jobs open in hospitals and in non-hospital fields, the higher pay and shorter hours now generally prevailing for nurses, the high standards of education offered at low cost, the value of nurse training as preparation for a career, marriage and family and community life, and the high respect in which the nursing profession is held by the community.

Programs in high schools, information centers for prospective student nurses, conducted tours of the local hospital or school of nursing for high school students, talks by nurses recruitment officials before civic, social, and business groups are planned as part of the local recruitment programs.

Ways in which local public health groups can assist in recruiting student nurses include sponsorship of advertisements in newspapers or spot announcements over local radio stations in coöperation with a local hospital, school of nursing, or nurse recruitment committee. Proofs of advertising mats prepared by the Advertising Council, Inc., have been sent to schools of nursing. In coöperation with nurse recruitment officials, local public health groups might prepare a brochure or booklet on nursing, assist in arranging nursing education meetings of various clubs and organizations and high school groups, operate an information booth on nursing in a department store or some other central place.

Public health officials interested in assisting the 1947 Student Nurse Recruitment Program are urged to get in touch with nursing schools and hospitals for further information about local nursing needs and recruitment efforts.

American Journal of Public Health
and THE NATION'S HEALTH
Official Monthly Publication of the American Public Health Association

Volume 37 June, 1947 Number 6

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WHAT IS HEALTH EDUCATION?

HEALTH Education is the newest of the professional specialties to be developed as a basic and essential element in the public health program. In the 19th century, the sanitarian and the bacteriologist were the dominant figures in the field. In the early 20th century, the physician and the nurse came into the picture. Today, our Committee on Professional Education has prepared detailed statements of educational qualifications for thirteen different types of specialists—with more to come. In none of the areas of service has development been more rapid than in that of health education. Ten years ago there were perhaps a dozen recognized experts of this kind in the United States. Today the accepted minimum standards for local health service list the health educator along with the administrator, the nurse, the sanitarian, the statistician, and the laboratory expert as a fundamental element in every program.

It seemed to the Editor desirable to see what all this shouting was about. We have, therefore, invited fourteen leaders in health education, approaching the subject from the differing viewpoints of the health officer, the physician, the nurse, the health council executive, the faculty member of the school of public health, the expert in school health, and the U. S. Public Health Service, to prepare brief and succinct answers to the question, "What Is Health Education?" The resulting symposium is presented—with much satisfaction—as the special review article in this issue of the *Journal*.

Frankly, we expected fireworks; and we are agreeably disappointed in this expectation, for the display is one characterized by much light and little heat.

Dr. Bauer and Miss Connolly emphasize the broad scope of the process of health education and the fact that it includes the impact of the whole of life's experiences, as affected by a wide variety of forces bearing on the health knowledge and practices of the individual. Dr. Dublin stresses the important rôle of the practising physician, whose direct contacts with the individual are central and determining in their influence; and Miss Fox elaborates the kind of personal guidance which is the prime factor in the activities of the public health nurse. Several contributors point out that among the forces which mould the health

consciousness of the public are many which are positively harmful in their trend, such as many forms of commercial advertising (Dr. Bauer), and the propaganda of cultists (Mr. Marquette). Dr. Derryberry notes that a hurried and inhuman clinic contact or a casual and superficial health examination may nullify all that has been accomplished by arduous efforts to cultivate a sense of the preventive service which the physician can and should render to the public.

The theme most commonly stressed by our contributors is that the object of health education is to mould conduct and that it is valueless unless it actually changes the habits of the individual. This is emphasized by Dr. Bauer, Dr. Derryberry, Mr. Green, Miss Jean, and Dr. Peter. Miss Fox and Mr. Green remind us that if success is to be attained, the program must be carefully planned so as to be purposefully directed at a given group, for the attainment of specific results. Mr. Groom underlines the importance of brevity and compactness and simplicity in producing maximum results with minimum effort. Dr. Bundesen cites the admirably efficient way in which the resources of a great city health department may be focused on the attainment of specific ends, such as immunization or infant care.

Health education, however, is something more far-reaching and more deep-seated than the important task of securing compliance with particular procedures. That is—after all—training, not education in the true sense of the term. Dr. Morgan points out that we must cultivate a general habit of mind as well as inculcate specific practices; and that in the field of public health this habit of mind must be grounded in a broad and fundamental social philosophy.

Finally, Dr. Nyswander and Dr. Wilson strike what is perhaps the most fundamental note of all. They point out that the important thing is "learning" not "teaching," and that conduct is not controlled by intellectual processes alone but by motivation. Unless the learner really *wants* what he has learned to be good, he will not seek it. The essence of a change in behavior is motivation, and motivation comes only through experience. The experience may be "learning by doing" or it may be "learning by feeling." It may involve a physical act leading to habit formation or an emotional experience such as may result from hearing a speech or seeing a poster. What is essential is that the learner—through act or feeling—shall himself make a contribution to the process. Without such active participation on his part, the seed will fall on stony ground.

A NATIONAL NERVE CENTER FOR PUBLIC HEALTH LABORATORY SERVICE

A YEAR ago (July, 1946) the activities of the Office of Malaria Control, which proved of such inestimable value during the war, were crystallized in what it is hoped may be a permanent form, through the establishment of a Communicable Disease Center of the U. S. Public Health Service at Atlanta, Ga. As the name of the new organization indicates, its scope of interest will be broadened to include any or all communicable diseases, although major emphasis will at first continue to be in the field where insect vectors or animal reservoirs are of importance. The functions of the center will include research and evaluation, training of personnel, and emergency service to communities where special problems may arise.[1]

One of the most important elements in the program is the creation of a Division of Laboratory Services, described by Seward E. Miller at the Cleveland meetings of the American Public Health Association last fall.[2]

This division will fulfil three major functions: In the first place, it will continue intensive research on such problems as the serology of rickettsial diseases, precipitin tests for the type of blood present in the stomachs of mosquitoes, and the study of neurotropic viruses (carried on at the laboratory established at Birmingham, Ala., for rabies research by the Rockefeller Foundation). It hopes to extend its researches to the evaluation of the performance of various public health laboratory techniques (along the lines already established by the U. S. Public Health Service in connection with the serology of syphilis). Such studies are to be carried on in close coöperation with appropriate committees of the American Public Health Association and of the Conference of State and Provincial Public Health Laboratory Directors. They will not be directed toward any official U. S. Public Health Service standards but are planned as aids to the laboratory workers of the country in formulating and standardizing their own procedures.

A second function of the division will be direct consultation service to individual laboratories which may call for assistance. This may involve emergency epidemic aid where necessary; but will ordinarily consist in response to requests for advice as to particular procedures or the temporary assignment of laboratory personnel for the purposes of solving technical and administrative problems or improving techniques and practices. It is hoped that ultimately such service may be extended into the fields of biochemistry and hematology as well as microscopy and cultural and serological techniques. The division will also be concerned with the vital problems of laboratory design and equipment, working in coöperation with the new U. S. Public Health Service Division of Hospital Services. Federal assistance will be available, under an Act of the last Congress for public health laboratories, as well as for health centers and hospitals. The Committee on Laboratory Quarters and Equipment of the Conference of State and Provincial Public Health Laboratory Directors has been asked for aid in establishing minimum standards for such laboratories. When these standards are established, a number of designs and plans for such laboratories will be prepared.

A third important function of the Atlanta Center will be training of personnel. Progress along this line has already been instigated by establishing in Atlanta parasitology laboratories composed of equal units of helminthology, protozoölogy, and medical entomology. The staff of these laboratories is busily engaged in fulfilling the request of the American Society of Tropical Medicine that the U. S. Public Health Service give short refresher training courses in the laboratory diagnosis of tropical diseases. To date, five such 6 week refresher courses in the laboratory diagnosis of parasitic diseases have been taught, with particular emphasis upon malaria, amebiasis, leishmaniasis, schistosomiasis, echinococcosis, filariasis, and hookworm disease. The courses are given free of charge to qualified public health laboratory workers and now, by arrangement with the Veterans' Administration, about 12 or 13 students in each of our succeeding classes will be from the technical workers in the laboratories of the various Veterans' Hospitals throughout the country. The educational program has been broadened by mailing out special teaching materials to some 173 laboratories which have expressed an interest in the project. This service was initiated with malarial smears but is being extended to include other parasitic materials and those relating to various types of communicable diseases. The participating laboratories will retain these slides and specimens, and thus will ultimately accumulate a considerable collection of demon-

stration and teaching material for reference study and for the training of new employees.

The experiences of the war have broadened our vision to recognize that "tropical diseases" or "exotic diseases" are diseases which occur most extensively in other countries but which may also, not infrequently, be present in our own land. The mechanisms developed to cope with temporary problems of the war emergency have been continued and expanded at the Atlanta Communicable Disease Center to provide a most valuable element in our permanent health defenses.

REFERENCES

1. Andrews, J. M. The United States Public Health Service Communicable Disease Center. *Pub. Health Rep.*, 61:1203 (Aug. 16), 1946.
2. Miller, S. E. Laboratory Technological Service Program of the Communicable Disease Center. Paper presented at the Seventy-fourth Annual Meeting of the A.P.H.A., November 11, 1946.

AN INGENIOUS YARDSTICK FOR MEASURING HEALTH STATUS

THE Editor has recently come across a new device for stimulating a local sense of unfilled needs in public health which produces somewhat striking results. How sound it is, must be left for the expert statisticians to decide.

This procedure has been introduced by Professor S. C. Mayo of the Department of Sociology of the North Carolina Agricultural Experiment Station [1] and has been extensively used in the recent campaign for additional funds to support the health and hospital program of that state.

Professor Mayo's procedure is—in essence—a modified method of computing age-standardized death rates, with a more rigorous yardstick. His objective is to make comparison for each age period with the lowest death rate for that period recorded in the 1940 Census for white persons in the urban or rural area of any state. The figures actually used are as follows:

Age Period, Years	*Area Used*	*Deaths per 1,000*
Under 1	Rural Oregon	28.4
1– 4	Urban Wisconsin	1.4
5–14	Rural Arizona	0.5
15–24	Urban Rhode Island	0.8
25–34	Urban Massachusetts	1.3
35–44	Rural Kansas	2.6
45–54	Rural Iowa	5.2
55–64	Rural Arizona	11.5
65–74	Rural Arizona	27.3
75 and over	Rural Arizona	72.8

Professor Mayo, using these figures, computes that, if the minimum rates tabulated above had obtained in North Carolina, that state would have had 16,642 deaths in 1940. It actually had 31,904 deaths.

The procedure used obviously ignores racial and economic and climatic differences on the assumption that these differences may conceivably be overcome (which is certainly true of those relating to economic status). If such limitations are frankly recognized, stimulation of local pride to overcome existing obstacles, as far as possible, ought to prove wholesome. A question also arises as to the validity of rates (such as those for Rural Oregon and Rural Arizona) which are

based on populations of between 3,010 and 55,100 persons. (The lowest actual number of deaths at any age period is at age 55–64 for Rural Arizona.)

The technique, however, seems to offer an intriguing challenge. We would welcome correspondence on it, and particularly suggestions by statisticians as to the minimum populations which might be safely used in such an estimate. It would seem worth while to test a formula of this type by application to various communities and areas.

REFERENCE

1. *Progress Report No. R S-6,* North Carolina Agr. Exp. Station, State College Station, Raleigh. Sept., 1945.

Report of the Archivist, 1946

Laboratory Section

AT the meeting of the Association in 1944 report was made that since all available early archival material appeared to have been deposited, it was planned to examine some of the items in detail for their value as historical records or for reference. It seemed logical to begin with an examination of the collected programs. This is the forty-sixth official meeting of the Section. Since it is almost a quarter of a century since the last meeting in Cleveland (1922), the program for that year was selected. A comparison of the programs of 1922 and 1946 gives a remarkable picture of the advancing place of the laboratory in the practical and academic fields of medicine and public health.

In 1922 the membership of the Association was less than three thousand, while now it is over ten thousand. The membership of the Section in 1922 was approximately 500, having also trebled in the twenty-four years to its present fifteen hundred. The character and scope of the work of the Section have also developed significantly.

Dr. Hitchens was secretary of the Section in 1922 and chairman of the program committee. The Section had two sessions. The program lists nine papers, one committee report, and the address of the chairman, Dr. B. L. Arms, Director of the Bureau of Diagnostic Laboratories of the Florida State Board of Health. At the present meeting, the Laboratory Section is scheduled for more sessions and for the presentation of a greater number of papers than any other section of the Association—eight sessions of the Section alone and one joint session, with a total of fifty-eight presentations and eight committee reports. Moreover, the Conference of State and Provincial Public Health Laboratory Directors met for two full days before the Association meetings, with three sessions each day. This situation is all the more interesting when the constitutional restriction on the newly formed Laboratory Section in 1900 is recalled. The authorization for the Section, which was organized in 1899, reads:

> "Meetings shall be held on the first day of the meeting of the Association and at such other times as may be decided upon, but no meeting shall be held during the time occupied by the meetings of the Association."

The contribution of the laboratory is further shown by an examination of the programs of 1922 and 1946 against a handwritten report in the archives of 1908 from Dr. Herbert U. Williams of the University of Buffalo—"A report on standard methods for laboratory diagnosis of syphilis."

> ". . . The outlook for the practical employment of laboratory methods in Board of Health work seems not very encouraging for the immediate future. . . . Attention must be paid to staining with aniline dyes, to silver impregnations, and to serum diagnosis. . . ."

In 1922, fourteen years later, Dr. Young and Dr. Kahn reported on the use of the serologic test for syphilis in a public health laboratory; and intervening progress since 1922 is suggested by the important series of papers in Cleveland's program dealing with the standardization of laboratory procedures in the field of public health.

The keynote of the address of the

chairman[1] in 1922 was "Service." Dr. Arms said:

> "I have selected the motto 'Service' as indicating what I feel the Laboratory Section . . . and the individual worker . . . should stand for.
>
> "The laboratory worker has a real place to fill . . . Public health administrators all over the world are depending more and more on laboratory work to guide them in their endeavors to limit the spread of disease and, what is far more important, to prevent the occurrence of infection.
>
> ". . . It is a fact that the keynote of our profession may be summed up in a single word —'Service.'"

Certainly this attitude of service was outstanding in the career of Dr. Mazÿck P. Ravenel, charter member, whose death has occurred since the last meeting, and whose contributions and achievements have been widely noted. The deaths of Dr. Ravenel and of twenty other members of the Section are here recorded with regret.

You will recall that in 1943 Dr. Wadsworth canvassed members of the Section to secure a record of services and activities in relation to the war at that time. It seems important to complete that project as far as possible by attempting to secure a final record by another questionnaire to the members.

Since the establishment of the office of archivist in 1935, the status and needs of the collection have been reported regularly. By action of the Council, the minutes of the meetings of the Section and of the Council are now deposited. No record of current activities of individuals, groups, or committees has been received, however, since 1941. As has been said in other years, the test of the archival quality of a record is still often taken to be that of age, but any document or correspondence that forms a part of an official transaction and that should be preserved for future reference should be deposited in the archives as soon as it ceases to be of current use. I, therefore, close with a renewed appeal for an awareness of the value of each transaction related to the Section.

Deaths of members reported between meetings of October, 1944, and November, 1946

Theodore D. Beckwith, Ph.D.
Los Angeles, Calif.
Elected member 1934

George E. Bolling
Brockton, Mass.
Elected member 1900
Charter Fellow and 40 year member

Severance Burrage, D.P.H.
Denver, Colo.
Elected member 1897
Charter Fellow

O. N. Eisaman, M.D.
Pittsburgh, Pa.
Elected member 1940

Harry M. Endowe
New Haven, Conn.
Elected member 1938

John Grill, M.D.
Milwaukee, Wis.
Elected member 1935

Nell P. Hall
Champaign, Ill.
Elected member 1931

Jane I. Hershey, Ph.D.
St. Louis, Mo.
Elected member 1941

Fred H. Jennings
Watertown, N. Y.
Elected member 1908

Israel J. Kligler, Ph.D.
Jerusalem, Palestine
Elected member 1912
Charter Fellow

Lt. Peter J. Knaus, Sn.C.
Service overseas
Elected member 1943

William Litterer, M.D.
Nashville, Tenn.
Elected member 1926
Elected Fellow 1934

Joseph McFarland, M.D.
Elected member 1899

Ward J. MacNeal, Ph.D., M.D.
New York, N. Y.
Elected member 1920

Walter H. Oglesby
Clovis, N. M.
Elected member 1945

William O. Pauli, M.D.
Cincinnati, Ohio
Elected member 1930

Mazÿck P. Ravenel, M.D.
Columbia, Mo.
Elected member 1897
Charter Fellow

Randle C. Rosenberger, M.D.
Philadelphia, Pa.
Elected member 1915
Charter Fellow

Charles Urbach, M.D., Ph.D.
Philadelphia, Pa.
Elected member 1941

Mortimer Warren, M.D.
Portland, Me.
Elected member 1942

Fred A. Wiggers
Toledo, Ohio
Elected member 1940

REFERENCE

1. Arms, B. L. Service. *A.J.P.H.*, 13:37–39, 1923.

ANNA M. SEXTON

Public Health Interest in Pennsylvania

The Pennsylvania State Medical Society at its meeting in October, 1946, passed a resolution setting up a Commission on Public Health and Preventive Medicine within the society. Its chairman, Pascal Lucchesi, M.D., reported on the plans of this Commission at a recent annual meeting of the Pennsylvania Tuberculosis Society in Harrisburg.

He declared that the appointment of the Commission "marks the first official recognition of organized medicine in this state of the need for more active participation of this great medical body in the field of public health and preventive medicine."

Summarizing the difficulties created in the state by its complicated public health laws and its more than 2,500 local health jurisdictions, he outlined the following goals of his Commission:

1. Stimulate the interest of the medical profession of the state in public health through the County Medical Societies.
2. Stimulate the establishment of a graduate school of public health and preventive medicine in the state.
3. Bring about the united action of doctors, dentists, nurses, and allied groups for a better program of public health in the state.
4. Bring about a complete public health survey of the state.
5. Prepare a model public health code.
6. Bring about the establishment of decentralized full-time local health units.
7. Study specific local public health problems.

Coördinating Committee on Standard Methods

Laboratory Section

Personnel Changes—A. Parker Hitchens, M.D., Robert S. Breed, Ph.D., William D. Stovall, M.D., and Friend Lee Mickle, Sc.D., resigned as chairmen of their respective committees functioning under the Coördinating Committee on Standard Methods, and the resignations were accepted. Col. Hitchens, who had been chairman since the committee was originated, was commended on the accomplishments of the committee and was made an honorary member of the committee. A., H. Robertson, Ph.D., was elected Chairman of the Committee on Examination of Dairy Products, and Ralph S. Muckenfuss, M.D., Chairman of the Committee on Diagnostic Procedures and Reagents. The Committee for Frozen Desserts and Ingredients was put in Dr. Robertson's hands, at least until a permanent chairman is elected. Edmund K. Kline, Dr.P.H., as ex-officio secretary of the committee, was replaced by Geoffrey Edsall, M.D., the incoming Section secretary.

Committee on Examination of Water and Sewage—Walter L. Mallmann, Ph.D., is active in work preparatory to the publication two or three years hence of a 10th edition of *Standard Methods for the Examination of Water and Sewage*. John F. Norton, Ph.D., chairman of the Editorial Committee for the 9th edition of the water and sewage report, gave assurance that the 9th edition will soon appear, with a 1946 date.

Committee on Examination of Milk and Dairy Products—Dr. Breed presented a manuscript for the 9th edition of *Standard Methods for the Examination of Dairy Products* that was accepted by the Laboratory and the Food and Nutrition Sections, the councils of those Sections, the Coördinating Committee on Standard Methods, and the Association for publication. Dr. Robertson, who had been chiefly responsible for editing this edition, was elected chairman of the committee replacing Dr. Breed. Dr. Breed was continued as chairman of the Editorial Committee for the 9th edition of the dairy products report.

Committee for Frozen Desserts and Ingredients—The report of this committee revealed that several new procedures for examining frozen desserts and ingredients will appear in the 9th edition of the milk and dairy products report and procedures for sediment will be deleted as impracticable. The manuscript has been edited by Dr. Robertson and is ready for publication with the report from Dr. Breed's committee.

Committee on Diagnostic Procedures and Reagents—Dr. Stovall had submitted his resignation some time previously and the resignation was accepted at this meeting when it had been ascertained that he would no longer continue as chairman. Dr. Muckenfuss has accepted the chairmanship. It will doubtless be necessary for him to form an essentially new committee to begin preparation for the 3rd edition of *Diagnostic Procedures and Reagents*.

Committee on Virus and Rickettsial Diseases—Thomas Francis, Jr., M.D., and his committee presented an outstanding panel discussion before the

Laboratory Section at Cleveland. It was realized by those who heard it that the techniques for virus and rickettsial diseases are in much more complete form for publication than most of us had realized. At a very enthusiastic meeting of the committee a deadline of March 1 was set when the manuscripts are to be in the hands of Dr. Francis preparatory to a recommendation from that committee that a volume of laboratory techniques for virus and rickettsial diseases be published by the Association as promptly as possible.

Committee on Biological Products—In the absence of Dr. Robinson, the chairman, no meeting of the committee was held and no report submitted.

Committee for the Examination of Germicides and Antibacterial Agents—Your chairman does not know whether or not a meeting of this committee was held at Cleveland. Several interesting papers were presented by referees working under Stuart Mudd., M.D., in connection with the activities of this committee and some of them will certainly merit publication. Your chairman does not know whether publication in the *Journal* will take care of the accomplishments of this committee or whether a volume similar to that published by other committees is planned.

Committee on the Biology of the Laboratory Animal—In the absence of R. A. Kelser, Ph.D., the chairman, no report of this committee was rendered and no meeting was held.

Committee on Examination of Shellfish—James Gibbard reported activity on the part of this committee with considerably revised methods about ready for publication.

Possible Committee on Stains and Staining Technique—It is understood that E. K. Kline, Dr.P.H., was elected the Laboratory Section representative on the Commission of Biological Stains. Your chairman was informed that the work of that commission is expanding and that the commission would be glad to have the activities affecting public health laboratory work taken over pretty much by a committee of the Laboratory Section that might very well function under the Coödinating Committee on Standard Methods. The proposal was made that Dr. Kline might be invited to attend the next meeting of this committee to outline the activities contemplated.

SUMMARY

It can be seen even from this brief resume that the CCSM is one of the active, productive committees of the Association. We all realize the rapidly changing character of public health laboratory work in most of its ramifications at the present time. The efforts of the committees functioning under CCSM bid fair to produce far-reaching results. Apparently it is the function of the CCSM to stimulate these activities and coödinate them in every way possible. Your chairman feels most humble regarding his ability to be of service in this capacity. He can help arrange for meetings of this group so that the activities will be coördinated, and he can transmit the accomplishments to the Section and to the Association through the Committee on Research and Standards for action.

At the Cleveland meeting there was some expression of feeling that in its expanding functions the Coördinating Committee may have outgrown the Laboratory Section and that it may need to be raised to an Association level. A subcommittee of the Committee on Research and Standards has been appointed to consider the status of CCSM as a committee. Suggestions from each member to the chairman of the committee is desired toward a solution as to how the best future accomplishments can be secured.

PROPOSED MEETING

There seems to exist a real need for a meeting of CCSM in the rather near future. Some day during the second week of January in New York City has been proposed. This brief resume of the committee activities may serve as a sort of springboard to the development of agenda for the meeting. Comment and suggestions are requested.

FRIEND LEE MICKLE, Sc.D.,
Chairman

Proposed Federal Program for Circulatory Diseases

On February 26 Senator Claude Pepper of Florida introduced a Bill (S. 720) which has been referred to the Committee on Labor and Public Welfare, authorizing and requesting the President to undertake to mobolize at some convenient place or places in the United States an adequate number of the world's outstanding experts and to coördinate and utilize their services "in a supreme endeavor to discover new means of treating, curing, and preventing diseases of the heart and arteries."

The Bill briefly authorizes the President to undertake "in whatever manner he may deem most appropriate" to bring together outstanding experts from any country and to coördinate their services "through the Surgeon General of the U.S.P.H.S., or through an independent group appointed by him." The President is also authorized to build needed clinical laboratory research facilities in order adequately to approach this problem, which, according to the Bill, involves the death of more than 587,000 persons a year in the United States and which causes disability to more than 7 million persons.

The Bill authorizes the sum of $100,000,000 to be appropriated for these purposes.

Standard Methods for Dairy Products*

Laboratory Section

THE Committee on Standard Methods for the Examination of Dairy Products wishes to present a 325 page manuscript covering the proposed ninth edition of *Standard Methods for the Examination of Dairy Products* of the American Public Health Association. This report is the work of four groups: (1) Committee on Milk and Milk Products of the Laboratory Section, (2) Committee on Frozen Desserts and Their Ingredients of the Laboratory, and Food and Nutrition Sections, (3) Committee on Assay of Foods of the Food and Nutrition Section, and (4) the Association of Official Agricultural Chemists.

Directions for some of the older technics have been improved and a few new and promising technics have been introduced. Among the new methods are the resazurin test, the methods that have been developed by the Federal Food and Drug Administration for determining the amount and type of extraneous matter in dairy products other than market milk and cream, and methods for the bacteriological examination of stabilizers used in frozen desserts.

Only two changes in commonly used technics will cause enough change in results secured to be worth mentioning:

(a) The temperatures given for the incubation of agar plates in the eighth edition are 32° or 37° C. After consultation with the Directors of State and Provincial Laboratories and others, the incubation temperatures have now been established at 32° C., or at 35° C. This will increase the accuracy of results especially where the temperature used is 32° C. However, those laboratories that lower the temperatures used for agar plates will secure somewhat higher counts than they have had previously. Administrators should therefore modify enforcement procedures until the industry has been able to adjust itself to the more severe requirements.

(b) The hourly inversion of tubes during incubation of samples for the methylene blue reduction test will cause reduction to take place somewhat more quickly in certain samples of milk, and there will be a greater accuracy in the results secured.

The committee is deeply concerned over the findings reported by Black (*Public Health Reports*, U.S.P.H.S., 58:1605, 1641, and 1681, 1943) which showed that many laboratories do not follow essential requirements outlined in *Standard Methods* for making bacteriological analyses of dairy products. These findings should not be ignored. The records indicate that laboratory work is best done in those areas where state or provincial departments of health supervise the methods used in milk control laboratories in their respective jurisdictions.

Supply houses report that thousands of bacteriological incubators of the type that are heated with high temperature hot plates in the bottom of the chamber have been sold during the past year. From this it may be presumed that little heed is paid to the warning in the Standard Methods Report since 1939

* Report of the Joint Editorial Committee for Standard Methods for the Examination of Dairy Products.

that incubators of this type are unsatisfactory for milk work.

Some additions have been made to the Chapter on the Determination of Vitamins by the committee of the Food and Nutrition Section. These consist of methods for the determination of vitamin B, B_2 and niacin.

The most important improvement in the new report has been made by Dr. A. H. Robertson. He has edited the entire text so as to give the reports of the various referees a uniform simple and direct style. A simple cross-reference system has also been introduced. Discussions of the applications and limitations of the various technics have been rewritten by Dr. Luther Black, and have been segregated in a separate chapter at the beginning of the report.

All of this editing and rearrangement will lead to better indexing that will make the report more usable, thereby fully justifying the printing of a new edition.

R. S. BREED, PH.D., *Chairman*
A. PARKER HITCHENS, M.D.
F. LEE MICKLE, SC.D.
H. T. SCOTT, PH.D.
A. C. HUNTER, PH.D.*

* Deceased.

Action was taken at the Cleveland meeting by all of the Section groups and by the Association Committee on Research and Standards recommending to the Governing Council the publication of this manuscript as the Ninth Edition of *Standard Methods for the Examination of Dairy Products.*

Examination of Frozen Desserts and Ingredients*

Laboratory and Food and Nutrition Sections

IN the last report of this committee it was stated that a manuscript revision of the text of the 8th edition of *Standard Methods for the Examination of Dairy Products* had been prepared by Dr. A. H. Robertson preliminary to the preparation of the 9th edition of that report, the purpose being to have a revision of the entire text prepared by one individual with the elimination of inconsistencies in directions written by different referees. At the time that the last report was written the activities of the referees in the preparation of methods had been nearly completed and all that remained for the Committee to do in preparation for the 9th edition of *Standard Methods for the Examination of Dairy Products* was to work with the Standard Methods Committee on Milk and Milk Products of the Laboratory Section and with Dr. Robertson as editor of the 9th edition to complete the revision of the text to conform with the text for the other portions of the publication.

Two meetings of the Standard Methods Joint Committee on Frozen Desserts and Ingredients have been held since the last report was submitted. Both were held jointly with the Committee on Milk and Milk Products of the Laboratory Section. The meetings were well attended and real progress was made toward publication of the forthcoming edition of the dairy products report.

In the preparation of the 9th edition much effort has been expended in getting the technical procedures into an imperative form which it will be easy for laboratory workers to follow. In doing this it was found desirable to sort out the material dealing with the interpretation of results and the discussion of the uses and limitations of methods and remove it to a separate chapter where it has been combined with similar material regarding milk and other milk products. It is believed that in this form the new new edition of *Standard Methods* will be much more serviceable not only to laboratory workers but also to control officials.

The accomplishments of the committee in preparation for the 9th edition of the dairy products report can be summarized as follows:

1 Methods for the microbiological examination of stabilizers have been included among the technical procedures.

2. Directions for determining the weight per unit volume of ice cream have been incorporated as determined by the Gibbard and by the Hart Method.

3. The sediment test methods for frozen desserts and for frozen dessert ingredients that appeared in the 8th edition have been deleted as they were deemed impracticable.

4. A suggestion has been made in the 9th edition that one or more modifications of the methods for extraneous matter in dairy

* Report of the Joint Standard Methods Committee.
STANDARD METHODS COMMITTEE ON FROZEN DESSERTS AND INGREDIENTS
Organized 1937. Published reports: *Year Books* 1937–1938, 1938–1939, 1939–1940, 1940–1941, 1941–1942, *A.J.P.H.*, May, 1943, Aug., 1945.

products may be adapted to the detection and determination of filth and foreign matter in both frozen desserts and frozen dessert ingredients.

5. Applications, with precautions, of the phosphatase test are suggested for use on finished frozen desserts.

There has been considerable discussion among the members of the committee of proposals relative to (a) weighing out the first portion of frozen desserts while the material is still frozen, and (b) reconsideration of the procedures for coliform determinations in frozen dessert products. These rather controversial matters probably will require further study before directions can be prepared that will be acceptable to all who are interested in these procedures.

Dr. K. G. Weckel, University of Wisconsin, Madison, Wis., was appointed referee for sediment test methods in frozen desserts to fill the vacancy mentioned in the last committee report.

It is suggested that the Laboratory Committee of the Joint Committee on Frozen Desserts and Ingredients might well be discontinued with the publication of the 9th edition of *Standard Methods for the Examination of Dairy Products* as the present activities of the committee will be completed when that work is published. Any studies on frozen desserts to be undertaken in preparation for a 10th edition of *Standard Methods* might well be taken under consideration by the Committee on Milk and Milk Products.

FRIEND LEE MICKLE, SC.D., *Chairman*
Joint Committee
State Department of Health
Hartford, Conn.

Representatives from the Laboratory Section

FRIEND LEE MICKLE, SC.D., *Chairman*
JAMES A. GIBBARD
A. H. ROBERTSON, PH.D.

Representatives from the Food and Nutrition Section

F. W. FABIAN, PH.D., *Chairman*
J. H. SHRADER, PH.D.
K. G. WECKEL, PH.D.

Associate Referees

M. T. BARTRAM, PHD.
PAUL A. DOWNS, PH.D.
H. H. HALL
F. LESLIE HART
P. S. LUCAS
W. H. MARTIN
PAUL S. PRICKETT, PH.D.
M. J. PRUCHA, PH.D.
P. H. TRACY, PH.D.

Examination of Water and Sewage*

Laboratory Section

YOUR committee is glad to report that the ninth edition of *Standard Methods* for the *Examination of Water and Sewage* is now in press. The ninth edition has been delayed in preparation largely because of many obstacles caused by the war.

The work of your committee has been completed with the publication of the ninth edition. It is suggested that a new committee be appointed immediately to plan for the tenth edition, as there are already many suggestions which have been received on improvements of methods which will appear in the ninth edition.

Dr. George E. Symons, who has been employed to edit the ninth edition by the Joint Editorial Committee makes the following recommendations in regard to future editions:

A Joint Editorial Board for the tenth edition should be formed and begin work as soon as the ninth edition is off the press.

The tenth edition should be published not later than early 1950, as many of the methods in the ninth edition are already subject to criticism. Publication in 1950 means that revision of the text must be accomplished by the spring of 1949 in order to allow one year for final editing and printing.

Each association interested in Standard Methods should have a committee devoting its energies to that subject with the membership being chosen with full consideration of geographical location, laboratory facilities, and laboratory interest of the members.

These committees may find it helpful to adopt the system used by the Standard Method Committee of the Federation of Sewage Works Associations, namely that all of the material falling within their provinces of interest be circulated throughout the entire committee membership for comment, correction, addition, editing, etc.

Chemical methods, etc., should be reviewed by members of the American Chemical Society as well as by committee members of the Standard Methods Committees of the A.P.H.A. and A.W.W.A. Methods dealing with microscopic analysis and bacteriological analysis should be referred to the pertinent coöperating committees, and sewage tests should be referred to the Federation of Sewage Works Associations Committee.

It has been suggested that the Joint Editorial Board, when appointed, should review on the broadest possible basis, the functions for which it was established and report to the governing bodies of constituent associations its decision as to the proper activities it will undertake.

Heretofore the Editorial Board has concerned itself only with appraising published methods. It has been suggested that the Joint Editorial Board extend its activities to the field of developing new and better methods of analysis.

Objections have been raised to this suggestion for broadening the scope of the Joint Editorial Board. A compromise between these two viewpoints appears desirable. Perhaps the Joint Editorial Board should broaden its scope to the extent that it assemble opinions as to the weaknesses of individual

* Report of the Standard Methods Committee.

STANDARD METHODS COMMITTEE ON EXAMINATION OF WATER AND SEWAGE
Organized 1899. Reorganized 1933. Published reports: *Year Books* 1930–1931, 1934–1935, 1935–1936, 1937–1938, 1939–1940, 1941–1942, *A.J.P.H.*, May, 1943, Aug., 1944, Sept., 1945. 9 volumes published: 1905, 1912, 1917, 1920, 1923, 1925, 1933, 1936, 1946.

methods and then direct the coöperating committee of the proper association to develop more adequate methods.

When the revision of the ninth edition gets under way, the activity of the Editorial Board should be publicized both in the technical press and at the technical meetings. Criticism of methods and comments should be sought from all interested parties during the work of revision, not after the copy is ready for typesetting.

Criticism has been received of at least twelve individual methods for water analysis and nearly as many for sewage with particular criticism of the inadequacy of many methods for analyzing industrial waste.

Among a number of detailed suggestions received these three perhaps merit mention here:

a. Add an appendix containing conversion factors
b. Review foreign methods
c. Include in each method a statement of this accuracy of the method

Work on the revision should proceed at once to be completed within a specified time. One of the delays and expenses of the ninth edition was the revision of methods after they had been set in type. The issue should not be held up pending further studies on any methods. Revisions of the book should be frequent enough to keep the book up to date without having to revise it in galley form.

The various Standard Methods Committees of the several associations should undertake to investigate or have referee committees investigate methods in Appendix I of the ninth edition. Information should be actively sought on these methods in order that they may either be moved into the standard text or discarded. The section on non-standard methods should be an active part of the book, not a catch-all for various proposed methods which no one ever uses.

Dr. Buswell of your committee states: "Having been associated with the revision of Standard Methods for something over a quarter of a century, the writer feels very strongly that the time has now come to employ a competent person for at least half time and perhaps full time, to keep track of the literature on water analysis methods and to organize coöperative field testing of new methods and correlate the results of such tests. Up to the present time such work has been more or less haphazard.

It is believed that the trend toward instrumental methods in analytical procedures is now so strong that the new Standard Methods will need to consider such questions as specifications for the shielding of the various electrodes, wave lengths, and transmissibility specifications on color filters, as well as specifications for instruments used in a number of recently applied spectroscopic methods. Up to the present time it has been the policy of the committee to avoid specifications on instruments, merely requiring that they produce results in accordance with older methods.

Your committee feels the need of investigating, by individuals and coöperating groups, many phases of Standard Methods. For example, there is a distinct need for a careful study of methods of evaluating the sanitary quality of rural water supplies. At present, the methods used for checking public water supplies is applied although rural water supplies are, in many respects, an entirely different problem in sanitation. There is a need for evaluating incubation temperature. A 35° C. temperature has been recommended for incubation of milk plates. It would be well to determine its value for the incubation of water sample tests.

In the preparation of material for the ninth edition, your committee was responsible for materials for the sections

on bacteriological and microscopical procedures. Other sections were prepared by other agencies. Your Chairman believes that other coöperating associations should be responsible in the preparation of materials pertaining to their groups. For example, the section on sewage methods for the ninth edition was carefully prepared by the Committee from the Federation of Sewage Works Associations.

Your committee should be reorganized with the coöperating associations in mind as to their responsibility in the preparation of Standard Methods.

W. L. MALLMANN, PH.D.,
Chairman
MAC H. MCCRADY
A. M. BUSWELL, PH.D.
F. W. GILCREAS
C. A. STUART, PH.D.
J. T. TRIPP, PH.D.
T. A. OLSON, PH.D.
M. STARR NICHOLS, PH.D.

International Pediatricians to Meet in United States in July

The fifth International Congress of Pediatrics will be held in New York, July 14–17 at the Waldorf Astoria Hotel.

Leading specialists in children's diseases, 2,200 strong, will gather from 50 countries. The Congress will be sponsored by the American Academy of Pediatrics, the American Pediatric Society, the Society for Pediatric Research, and the pediatric section of the American Medical Association. American foundations—the Rockefeller Foundation, the Milbank Memorial Fund, the Josiah Macy Jr. Foundation, and Procter and Gamble Company, among others—have made contributions, as have the International Congress itself and the American Academy of Pediatrics, toward the expenses of the Congress, including in some cases financing the trips of foreign delegates.

Clearing House on Public Health Salary Information

WITH the introduction of this informal and temporary department of the *Journal* in the May issue (page 576), the Editors promised to collect information about salaries of public health workers from the sources available to them, and invited readers to participate in the discussion.

We present herewith the month's gleanings. The items are in no special order other than that given them by the make-up man. If they prove anything it is that a ferment is at work and various groups in public health are beginning to raise their voices in their own behalf for recognition of the monetary value of their services.

Next month we hope to publish a recommended salary scale for health officers approved by the Executive Board.

The Canadian Salary Study

The Canadian Public Health Association has recently published the findings of its Committee on Salaries and Qualifications of Public Health Personnel.[1] This committee declares at the outset, "If it is agreed that 'public health is only as successful as the people in it,' then the logical answer to procurement of 'successful people' is first to train them properly and then to make the public health positions in official agencies attractive enough to hold them. It should be obvious that it is economically unsound to spend money training personnel for public health and then lose them, for financial reasons, to other agencies or to private endeavor."

Acting on this faith, the Canadian committee makes salary recommendations in several grades for each of the professional groups working in public health in the dominion—physicians, nurses, engineers, laboratory and statistical personnel, nutritionists, veterinarians, and sanitary inspectors. The recommendations indicate an awareness of the fact that the prevailing salary levels must be raised if "public health positions in official agencies" are to be made "attractive enough" to hold trained workers.

Because of the differences in cost of living, the actual recommended rates for personnel in Canadian official agencies have limited usefulness for the United States. What is important, however, is the bold, sure recognition that the most important single action needed currently to secure and retain adequately qualified personnel is to raise salaries. Within a year after the Canadian Public Health Association was requested by the Dominion Council of Health to make a salary study and recommendations, the report was completed and published for distribution. Whatever may be its limitations, it at least has done the first most important job; it has started the thinking and planning for better public health salaries.

1. Report of the Committee on Salaries and Qualifications of Public Health Personnel, Canadian Public Health Association. *Canad. Pub. Health J.*, 38:1, 1–37 (Jan.), 1947.

Engineering Section Council on Salaries

At its meeting on February 10, 1947, the A.P.H.A. Engineering Section Coun-

TABLE 1

Federal Civil Service		*Engineering Society*	
Grade	Salary Rates	Grade	Salary Rates
P-1	$2,645–$3,400	I	$2,700–$3,400
P-2	3,400– 4,150	II	3,400– 4,200
P-3	4,150– 4,902	III	4,200– 5,100
P-4	4,902– 5,905	IV	5,100– 6,100
P-5	5,905– 7,102	V	6,100– 7,250
P-6	7,102– 8,180	VI	7,250– 8,600
P-7	8,180– 9,975	VII	8,600–10,350
P-8	9,975–10,000	VIII	10,350–12,600
P-9	10,000 and up	IX	12,600 and up

cil adopted the following statement of principle:

> In view of the existing demand for engineers, it appears impossible to recruit and retain qualified public health engineers unless salary scales are comparable to those obtainable in other fields of professional engineering, as exemplified by the salary schedule prescribed by the American Society of Civil Engineers and those in effect under the Federal Civil Service, as shown in the attached table.

The salary schedules referred to in this statement of principle each provide for nine grades of duties and responsibilities and thus of salaries. The first grades are listed at $2,645–$3,400 and $2,700–$3,400 respectively for Federal Civil Service salaries and for salaries recommended by the American Society of Civil Engineers. Grade 9 figures are $10,000 and up and $12,600 and up respectively. In the intervals between, the Engineering Society's recommended starting salaries are progressively higher in each grade than those paid currently by the federal services.

The scales for the Federal Civil Service and the recommended salaries of the Engineering Society are shown in Table 1.

RECOMMENDED SALARIES—PUBLIC HEALTH NURSES

A newly graduated public health nurse without experience or special advanced preparation receives between $2,200 and $3,300 in voluntary health agencies, and in state or local official agencies; the same nurse in the employ of the federal government receives between $2,644 and $3,397, one-fifth more at the lower level and 3 per cent more at the upper level. This is the information shown in the most recent salary data published by the Nursing Information Bureau[1] in March, 1947.

For "positions attained on the basis of successful experience in nursing and/or supplemented by advanced or special preparation," the lowest salaries reported are the same as for the newly graduated nurse. The maximum salary in state or local official and voluntary agencies is $9,500; in the federal service it is $8,059, or about one-sixth less. These ranges apply to a wide variety of positions—from staff nurse rendering general service to director or educational director, consultant, or professor of public health nursing.

More recently the National Organization for Public Health Nursing has published its recommendations for current public health nursing positions.[2] Two salary levels are suggested for staff nurses; from $2,400 to $2,640 for the graduate registered nurse who has not yet completed an approved program of study in public health nursing, and might thus be thought of as an apprentice in public health, and $2,520–$3,300

1. Of the American Nurses Association, coöperating with the National League of Nursing Education and the National Organization for Public Health Nursing.
2. *Pub. Health Nurs.*, 39, 5:237–238 (May), 1947.

for the graduate registered nurse who has completed an approved program of study in public health nursing. The latter beginning salary is 5 per cent below that for federally employed public health nurses who begin at $2,644 and must also have completed an approved program of study in public health nursing.

The National Organization for Public Health Nursing does not make salary recommendations for positions such as administrators, supervisors, consultants, instructors and others, saying only that "they would of course be proportionately higher depending upon the extent of responsibility and qualifications required."

Suggested Salaries for Public Health Laboratory Personnel

At a recent joint meeting of the Association's Laboratory Section Council and the Laboratory Section Coordinating Committee an agreement was reached as to basic minimum recommended salaries for professional laboratory personnel. The salaries recommended are based upon the qualifications as outlined in the Report on Educational and Experience Qualifications of Public Health Laboratory Workers as recommended by the A.P.H.A. Committee on Professional Education and approved by the Governing Council in 1943.[1]

They are as follows:

Laboratory director	$7,500 and up
Assistant director	6,000–$7,000
Principal bacteriologist	4,000– 5,000
Associate bacteriologist	3,600– 4,500
Senior assistant bacteriologist..	2,800– 3,500
Junior assistant bacteriologist..	2,400– 3,000

Food for Thought

Minnesota's Health for March (Vol. 1, No. 3) in "Where Are They Now?" reports that, of 242 persons trained by the Minnesota Health Department since 1932, only 91 are still doing health work in Minnesota. It uses pictographs to show how extensively the various professional groups have strayed from their own training area. Engineers have the best record, 20 of 38 trained still in public health activities in the state. Unfortunately the retired, died, or status unknown groups are all classified together and make up one-third of the nurses. Of the remaining nurses trained, more than half are still in service in the state. The Minnesota bulletin does not philosophize about the reasons for the loss of nearly half of the still active workers whom it trained. However, since more than one-fourth of those known to be working are in public health work outside of the state and one-fifth have gone into private practice or industrial service, the connection between this turnover and salaries seems obvious.

Salary Study Under Way by State and Provincial Public Health Laboratory Directors

The Conference of State and Provincial Public Health Laboratory Directors has an active Committee on Qualifications and Salaries of Laboratory Personnel. Its Chairman is Miss Myrtle Greenfield, Director of the New Mexico State Health Department Laboratory, Albuquerque. This committee is studying current salaries and vacancies in state health department laboratory divisions with a view to arriving at salary recommendations. It has sent out questionnaires to all state health departments. As soon as these have been returned they will be analyzed and used as the basis for salary recommendations for laboratory personnel in official agencies throughout the country.

What the Readers Say

Dr. Henry F. Vaughan, Dean of the School of Public Health, University of

1. *A.J.P.H.*, 33, 7:882–887 (July), 1943.

Michigan, Ann Arbor, Mich., writes:

"I have a very strong conviction that salaries constitute the greatest single barrier to securing an ample supply of well trained and experienced career people in public health administration. If I were to list the ten most important causes for our inability to personnel our health departments, I would put salary in first, second, and third place.

"We must impress upon the public mind the fact that the director of a public health department is a trained health specialist whose salary should be commensurate with the income of other specialists in the medical field. The highest compensation in county or city government should go to the director of public health and the superintendent of education who have devoted years to their professional training and who because of their responsibilities and professional background are not to be compared with elective public office holders who usually have a business, trade or profession other than that of government.

"A real contribution can be made by the public in focusing attention upon the essentialness of making public health practice a professional service with adequate compensation and encouragement to those who prepare for and serve in this field. Business men, industrialists, and lay organizations can see to it that suitable remuneration for the public health officer is forthcoming, even though in some instances it is necessary to augment the public appropriation with temporary financial support from lay sources. This latter is suggested as a temporary expedient during the days of extreme shortage of personnel and a stop-gap until there can be a more general recognition of the need for adequate compensation. After all, the whole question resolves itself into one of competition. There are too many public health men resigning their positions to accept the more lucrative opportunities of private practice."

Credit Lines

CONTROLLING HAY FEVER IN NEW YORK

Recently completed at New York University (New York City) was a course of instruction in Methods of Control of Plants Detrimental to Public Health. Planned by an advisory committee of representatives of the health departments of New York City and Westchester County, New York, and the two metropolitan counties in New Jersey, Bergen and Hudson, it was designed to instruct health officers and others in carrying out a program of weed control in the metropolitan area during the summer of 1947.

The course was attended by more than 100 persons. In addition to the nearby communities represented there were students from Albany, Philadelphia, Connecticut, New Hampshire, and Cincinnati. The series of six lectures was priced at $5, with registrations accepted only for the entire series.

Partly as a result of this series, the Brooklyn Botanic Garden (N. Y.) in April sponsored a meeting of the metropolitan area garden clubs and health departments to consider the problem of weeds detrimental to public health. Included in the 1947 programs of the garden clubs will be the detection and elimination of ragweed and other weeds injuries to health.

FACTS ABOUT THE WORLD HEALTH ORGANIZATION

If you have missed any of the significant details about the World Health Organization in newspapers or other journals, a recent publication of the Interim Commission will fill in the gaps. A *Fact Book* of 15 mimeographed pages summarizes the background and origin of the WHO, what its current functions are, with particular reference to those taken over from UNRRA, the League of Nations, and the Office International d'Hygiene Publique. A list of publications, a bibliography, and general information as to headquarters and officers are included.

The Interim Commission's Headquarters office is at 6306 Empire State Building, New York. Brock Chisholm, M.D., is Executive Secretary, and Frank A. Calderone, M.D., is Director of the headquarters office. The Deputy Executive Secretary of the Interim Commission, Dr. Yves Biraud, is in charge of the technical office in the League of Nation Building, Geneva.

The *Fact Book* is availble from the Headquarters Office, World Health Organization, 350 Fifth Ave., New York 1.

TRIBUTE TO CLIFFORD CAUDY YOUNG

Many readers of the *Journal* will remember "Cy" Young, handsome, debonair, courageous in the face of an incurable cancer through which he lived ten years instead of the two that he was given by his doctors. Now Paul de Kruif has brought him to life for us again in "Anonymous Doctor to Five Million" in the April *Reader's Digest* (Pleasantville, N. Y.) In swift and moving style is told how he built the Michigan State Laboratories. His drastic reduction of the state's diphtheria death rate, his work in discovering the cause of Michigan's widespread goiter and the means of preventing it, putting the laboratories at the disposal of private physicians, the development of the Kahn test, the growth of Dr. Kendrick's pertussis vaccine experiments, the building of a virus laboratory, the provision of free pneumonia serum and free blood plasma—all these are re-

ported with the background of ingenuity, righteous indignation, and utter selflessness with which Young got funds from reluctant legislators. For example, when legislators objected to the cost of free blood plasma, he growled, "You can bury a baby for $125. It might cost all of $500 to save that kid with commercial plasma. If you want to bring money into this argument, its cheaper to let the babies die!"

C. C. Young died on June 5, 1944, before he had time to carry out his program, already mapped out, for providing free penicillin to all who needed it and could not otherwise afford it. In a real sense he lives in the C. C. Young Public Health Laboratory at Lansing in the 22 buildings of which his work and his spirit are radiating to all of Michigan and indeed to much of the world.

HEALTH OF FARM WORKERS

The January *Health Bulletin* of the North Carolina State Board of Health reports a project that could well be repeated in other areas. Late in 1947, the manager of the 22,000 acre Braswell Farms, located in Nash and Edgecombe Counties, arranged for a mass health survey of the farm employees. By arrangement with the health officers of the two counties the 900 persons in the 140 families employed by the farm were brought to the county health center where they received complete physical examinations, including chest x-rays provided through the State Department of Health's Mobile X-ray Unit. Blood samples were sent to the State Laboratory for analysis. The examination included dental inspection and a check up on vaccinations of children under six. It will be interesting to watch this project and the degree to which it succeeds in its aim of remedying as far as possible any defects.

One immediate by-product of the project, chest x-rays were offered to all inhabitants of the two counties.

INDUSTRIAL MASS X-RAYS

X-ray the Picture of Health is produced by the Health Education Division and published by the Tuberculosis Control Division of the New Jersey State Department of Health. It is a brief outline of the program of free chest x-rays for industrial employees. As background it gives briefly the tuberculosis mortality rates and the age incidence.

The illustrations are made up of letters or newspaper clippings about those plants in which workers have already been x-rayed. The list of nearly 100 plants is also included. Ring bound in a stiff red, white, and blue cover, it is an effective piece of specialized health education.

ART SERVES PLASTIC SURGERY

Artist Virginia A. McCall was recently announced as the winner of the 1946 Gimbel Philadelphia award of $1,000 given annually to a woman who has done outstanding work for humanity. She was cited specifically for assisting surgeons in plastic operations by making drawings of the patients for use by the doctors. She has also worked with bed patients in Veterans' hospitals, teaching them to make wood cuts, drawings, and water colors.

LEARNING ABOUT HEALTH IN SCHOOLS

We have decided that there is literally no end to the variety of ways in which communities can be made public health conscious. Credit Lines has recently been sent three issues of *World Week*. In case you are a stranger to it, as we previously had been, this is a national weekly magazine and is intended for the use of teachers of social science studies in high schools.

The three articles that interested us are "Keep Yourtown Healthy" (Feb. 3), "Yourtown's Hospital" (Feb. 10), and "Take It Away!" (Feb. 24). The first is about the local health department, the six standard functions that it

should carry on and the necessity for organizing in units large enough to do effective work. The second outlines briefly the need for hospital service and how each community can organize to meet these needs. The third deals with garbage and sewage disposal.

Each of these is written in a breezy style that relates the problems to the child's own home town. Photographs and anecdotes are used for illustration. Further, it has both a teachers' and a student edition.

If you have not seen this magazine you will perhaps want to send for a sample copy. Address, *World Week*, 220 East 42nd Street, New York 17. Group rates 50¢ a semester or $1.00 a year; teachers' edition $1.50 a year.

NASHVILLE'S NEW HEALTH BULLETIN

With February, 1947, The Health Advisory Committee of the Nashville, Tenn., School Health Service issued Volume I, No. 1, of *Health Bulletin* intended for teachers. It is full of ideas for health education. In the first issue are discussions of tuberculosis with special reference to "X-ray Program for City Schools," "Better Breakfast Week," "Physical Examinations." List of films and film strip and a "Did You Know That" department. Mimeographed, and with very simple, almost crude line drawings, it is nevertheless extremely effective.

WIDE USE OF CANADIAN V.D. FILMS

Canada's Health and Welfare (Feb. 1947) justifiably points with pride to the international recognition given its V.D. films. Very Dangerous, for male audiences, has been purchased by the Michigan and Hawaii boards of health and four commercial film libraries in the United States.

Sixteen to Twenty-Six, designed for women and girls, has been ordered by the U. S. War Department in sufficient quantity for all Women's Army Corps training centers, all army area overseas libraries, and for the Signal Corps library in Nanking. It is also being used in 13 "government girl" residences by the employees health service division of the U. S. Public Health Service. Over a dozen prints have been sold to the U. S. offices of the National Film Board.

Both films aroused considerable interest when they were shown at the annual meeting of the American Public Health Association in Cleveland last November. They are 16 mm. color films with commentary by the late Dr. J. J. Hagerty, former federal director of the Canadian Health Service. Available from the National Film Society of Canada, 172 Wellington Street, Ottawa.

IS DIABETES COMING UNDER CONTROL?

The Prudential Insurance Company of America (Newark, N. J.) has announced that under certain conditions, it will now insure men and women who are under treatment for diabetes. The announcement credits this move to the advances made in the treatment of diabetes in the past 25 years. It is careful to say that not all sufferers from this disease will be accepted but only those whose medical history is favorable.

NFIP IN 1946

The eighth *Annual Report*, (year ending May 31, 1946) of the National Foundation for Infantile Paralysis follows upon the most severe epidemic of polio since 1916. It tells how the serious epidemics were handled first in Utah, then Illinois. Other states with serious outbreaks were New Jersey, Tennessee, Texas, Wisconsin, Montana, Iowa, and Washington. The emergency care, together with the long-time programs, have been a heavy drain upon the funds of the Foundation.

Among the new developments described are the PEV's, Polio Emergency Volunteers, which are units of specially

trained women in bedside care of polio patients. They do non-paying non-professional tasks, thus leaving hospital staffs freer for the skilled tasks. During the year there were 2,000 such volunteers in 75 communities of 31 states. The Foundation now has 54 state offices and local chapters in 2,712 of the 3,070 counties.

Another development was the epidemic aid unit, made up of an orthopedic surgeon, orthopedic nurse, and two physical therapists. Each unit is "on call" by epidemic areas, to organize and supervise treatment until the community can recruit personnel to meet its needs. Such units have been established in coöperation with Harvard, Northwestern, and Stanford Universities, and the Watson School of Physical Therapy in Pennsylvania.

The report gives a complete report of the grants and appropriations authorized by the Foundation during the year, indicating in each case both purpose and agencies to which grant was made. In summary they are:

For virus research	$1,259,153
For research for the prevention and treatment of after-effects	599,674
For medical care	2,612,303
For education	3,102,585
Total	$7,573,715

Total disbursements against these grants and those authorized in prior years were $4,632,289.

HEBREW MEDICAL JOURNAL

Harofe Haivri (The Hebrew Medical Journal) 983 Park Ave., New York 28, which is dedicated to the continued growth of Hebrew medical literature, has concluded its 19th year of publication. Published semiannually, this journal is bilingual, one-half of each volume being printed in English, the other half in Hebrew. The journal has thus been of particular service to the medical department of the Hebrew University in Jerusalem.

Among the articles published in the English language in the 1946 volumes, public health workers would be interested in a report on "The National Workers' Sick Fund" and a description of "Hygiene and Sanitation among the Bedouins in Palestine." There are also two historical articles, one on the 10th Century Sabbathai Donnolo and the other on the ethics of Jewish physicians in ancient Hebrew Literature.

MINNESOTA ACTIVITY

We recently welcomed *Minnesota's Health* to the writing fraternity (March, p. 317). Now comes *Minneapolis Health News* also having started in January, 1947, with Vol. 1 No. 1. No doubt of it, the current air of Minnesota is energizing.

Minneapolis Health News is an attractive mimeographed four pages. Its first issue gives a brief history of early public health departments in states and cities. It also discusses the health bills currently under consideration by the Minnesota legislature, chiefly the Health Service Enabling Act. This would authorize county or multi-county health departments. It points out that the proposed act is the result of more than a year's work by a citizens' committee, the Minnesota Committee on Local Health Services.

TWO YEARS OF THE EYE BANK

About two years ago the Eye Bank for Sight Restoration in New York City was established. It has a threefold purpose: to take care of the supply and distribution of eyes the healthy corneal tissue of which is to be used in restoring sight to those blind or with defective sight because of injury or disease to the cornea, to train young surgeons in the technique of this transplantation operation, and to encourage research studies in the sources, preservation, and handling of the materials by laboratories or research workers.

With the coöperation of the American Red Cross and Eastern Air Lines, eyes are now often flown to the physicians who need them. This obviates the necessity of long and expensive travel for the patient whose sight is to be restored. The mere mechanism of listing needs, determining priorities, and getting doctor and patient notified as soon as an eyes becomes available is an invaluable service without which many of the operations to restore sight could not be performed.

The Eye Bank maintains a Laboratory for Ophthalmic Research whose director is Herbert M. Katzin, M.D. It has 50 affiliated hospitals in New York State and 27 in 8 other states. In mid-1946 a regional branch was established in Chicago to serve the Midwestern area through affiliated groups of hospitals and ophthalmological societies.

Details of the Eye Bank and its work can be secured from its Executive Director, Mrs. Henry Breckinridge, The Eye-Bank for Sight Restoration, Inc., 210 East 64th Street, New York 21.

UNITED MEDICAL SERVICE GROWS

The February *Bulletin* of United Medical Service (370 Lexington Ave., New York 17) indicates how its services have been snowballing in the two and one-half years of its existence. More than twice as many persons were covered at the end of 1946 as at the beginning of the year. Average number of new enrollments per month was over 20,000, but in January, 1947, they were nearly 51,000. Figures of number and amount of bills paid tell the same story; 1946 monthly average number of bills paid was over 600, in January, 1947, over 1,500; in 1946 the average monthly amount paid was over $36,000, in January, 1947, nearly $86,000 was paid.

United Medical Service is a doctor's plan of voluntary medical insurance sponsored by the Medical Society of the State of New York.

WORTH ACQUIRING

Nutritional Charts—The 12th edition of *Nutritional Charts for Medical and Other Specialists* was recently announced by the Research Department of H. J. Heinz Company. It also announces *Nutritional Observatory*, published three times a year to keep users of charts informed with current developments in more detail than is shown in the charts. Apply to Nutritional Observatory, Department 2C, H. J. Heinz Co., Pittsburgh 12.

Youth Serves the Community—This is a plan for student volunteer service in Community agencies giving information on how to organize such a plan, with emphasis upon creative experience and training in citizenship for the young. Available from Community Chests and Councils, 155 East 47th Street, New York 17, N. Y.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted. All books reviewed in these columns may be purchased through the Book Service.

Bovine **Mastitis**—*A Symposium*—*Edited by Ralph B. Little, V.M.D., and Wayne N. Plastridge, Ph.D., New York: McGraw-Hill,* 1946. 546 pp. Price, $7.00.

This is a comprehensive, up-to-date review of our knowledge of this disease written by a group of specialists. These include Mack A. Emerson, Charles W. Turner, Lloyd B. Sholl, Leland J. Tompkins, Wayne N. Plastridge, Claude S. Bryan, Ralph B. Little, J. Howard Brown, Arthur W. Stableforth, Oscar W. Schalm, and Elmer O. Anderson. Discussions cover the anatomy of the udder and the physiology of milk secretion, as well as the diagnosis, bacteriology, pathology, serology, etiology, control, treatment, and public health significance of this commonest of all cattle disorders that affect the quality of our milk supply.

Because of a literature that is too voluminous for anyone to study, even a specialist in this field, this book is timely and contains just the information that the public health worker needs. The problem of the control of this disease is not solved, but the problem is presented clearly and this presentation should in itself tend to direct observation and research into useful fields. Naturally streptococcal forms of mastitis are given the greatest amount of attention; but there is continuous recognition of other types of bacterial infections that cause other forms of mastitis, with the inclusion of a great amount of information that is not generally available.

The authors state on pages 179–181 that there is no conclusive evidence that a virus may be one of the predisposing causes of mastitis. However, in an addendum to the book, Baker and Little of the Rockefeller Institute at Princeton report that they have at last recovered a virus-like agent from guinea pigs inoculated with bloody milk from lactating cows. They point out that the significance of this finding is not yet clear. All told, this is a stimulating and worth while book.

ROBERT S. BREED

Biochemistry of Cancer—*By Jesse P. Greenstein. New York: Academic Press,* 1947. 389 pp. Price, $7.80.

Increased interest in all phases of experimental cancer has created a great need for up-to-date and critical technical treatises on that subject. This need, in so far as biochemistry is concerned, has been admirably filled by the timely appearance of this new publication. The book is prefaced by a chapter on the general phenomena and taxonomy of cancer. The first part deals with extrinsic and intrinsic factors involved in the induction of tumors; the second part deals with nutrition, endocrinology, and chemotherapy in attempts at control of tumor induction and tumor growth; the third part covers the chemistry of tumors, the chemistry of the tumor-bearing host, and the present status of the problem in relation to the properties of tumors. A comprehensive list of references for the work cited appears at the end of each chapter.

The author appears to have made no attempt at all-inclusiveness, but has carefully selected those topics for discussion which have met well established criteria for acceptance as scientific publications. The outstanding features of the book are the remarkable clarity of

presentation, the critical evaluation of the topics discussed, the excellent choice of subject matter and the inclusion of up-to-the-minute information on new research findings.

The book is highly technical and will find great use as a reference book and as a textbook for investigators in cancer research and students of medicine and related sciences.

LEONARD A. SCHEELE

Baby—A Mother's Manual—*By Stella B. Applebaum. Chicago: Ziff-Davis Publishing Co.*, 1946. 118 pp. Price, $2.50.

This is an attractive book, profusely illustrated and simply written. It attempts to cover the range of baby care from the prenatal period through the preschool age, adding a chapter on prevention and care of illness in the home. All this is attempted in 118 pages, with half of the book devoted to pictures rather than text. Because of the brevity of the book, the material is extremely telescoped, barely scratching the surface of some subjects. For instance, prenatal diet in its entirety is covered in one-half page.

In spite of this, the book seems to have certain values. The information is accurate as far as it goes and leads readers to want to learn more. There is a complete bibliography supplemented by direct references throughout the text, giving additional sources of information. Community agencies and their purposes are mentioned with their uses so that one would know where to turn for further help.

The attitude of the author toward the emotional tone in the family is particularly good. In an optimistic and taken for granted manner she explains how the parents' reactions to each other and the baby are important in keeping the baby secure and healthy.

There are many more detailed books available. However, this one would be a good beginning for an intelligent couple who are willing to read further, because it is generally attractive and stresses good emotional atitudes.

IDA MCROBERTS

Chemotherapeutic and Other Studies of Typhus—*By M. Van den Ende, C. H. Stuart-Harris, F. Fulton, and J. S. F. Niven with C. H. Andrewes, A. M. Begg, W. J. Elford, M. H. Gleeson White, W. L. Hawley, K. C. Mills, F. Hamilton, and C. C. Thomas. Medical Research Council, Special Report Series 255, London, His Majesty's Stationery Office*, 1946. 246 pp. Price, $3.65.

This is a report of the results of studies of typhus fever made by members of the Medical Research Council staff at the National Institute for Medical Research, London, and by the British Army Typhus Research team during the recent war. Interest was concentrated in fields which were believed not under intensive study by the U. S. A. Typhus Commission and Canadian workers. The principal objective of the British investigations was the discovery of an effective chemotherapeutic agent.

In the preliminary screening, some 238 drugs, which are listed, were tested for activity against experimental typhus infection in mice. Two of the compounds, sulfonamides designated V147 and V186, which are *para*-sulphonamidobenzamidine hydrochloride and *para*-sulphonamidobenzamidoxime hydrochloride, respectively, were selected for special investigation, as they were found to have some effect upon the development of the disease in mice, although not when their administration was begun later than 42 hours after infection. Section I of this report describes the studies of the toxicity of these drugs for mice, guinea pigs, and human beings. The observations afforded only a very rough approximation to the maximum tolerated

dose, but serve as a guide to therapeutic trials. The second and principal section of this monograph deals with the clinical use of these drugs in the treatment of typhus infections in human beings. As is usual under war conditions, a great deal of difficulty was encountered in setting up satisfactory test and control groups of patients. Preliminary studies were carried out in North Africa. The 1943–1944 Naples epidemic, which is briefly described, afforded an admirable opportunity for more satisfactory chemotherapeutic trials. The final analysis was based on a series of 60 patients, of whom, 30 received either V186 or V147. Throughout the work no data as to the retention, blood-level or excretion of the drugs could be obtained, as no method of chemical estimation was available. On the basis of clinical severity, duration, and mortality, there appeared to be no significant difference between the treated group and the control group. The observation failed to establish the value of either drug in the treatment of epidemic typhus. In the course of these studies it became necessary to consider very carefully the diagnosis, prognosis, clinical manifestations, and pathology of typhus fever. These have been reviewed in some detail. Comparison with the clinical features of typhus as given by Murchison, 1884, indicates how little the disease has changed in the last 50 years.

Sections III, IV, and V contain accounts of laboratory investigations of typhus carried out at Hampstead. In Section III, a quantitative test for the neutralizing antibodies against rickettsiae is described. The method of assay depends upon intranasal inoculation of mice. Section IV presents a comparison of typhus vaccines by active immunization of experimental animals. It was concluded that vaccine potency depends upon the number of rickettsiae present, and is independent of the "soluble antigen." The authors also express the opinion that the power of the vaccine to protect mice against the "toxicity" of rickettsiae injected intravenously affords the most convenient and reliable test of vaccine potency. The fifth section is devoted to a comparison of the antigenic structure of a murine (Wilmington) strain of typhus rickettsiae with that of a strain (Cairo, Egypt, 1942) (judged to be identical with the Breinl strain) of epidemic typhus rickettsiae. It is concluded that the surface antigen of the murine strain is similar to, but not identical with, the surface antigen of the epidemic strain.

This monograph is one of the important documents dealing with medical research during the recent World War. It is a reference work which all investigators of the rickettsial diseases will desire to have in their libraries.

KENNETH F. MAXCY

The Human Body — *By Clifford Lee Brownell and Jesse Feiring Williams. New York: American Book Company*, 1946. 310 pp. Price, $1.52.

This is a textbook on anatomy and physiology for upper grade school youngsters. Technical facts are simply stated and are subject to the usual errors of simplification so common to first editions. Collaboration with a physiologist would have been helpful. Perhaps junior high school children should not know that the human body has a reproductive system, since it is omitted in this text.

The anatomical diagrams are excellent and photographic cuts of youth activities may intrigue children. The hygiene content is incidental and will probably be either enlarged or deleted in future editions. "Questions and Problems for Discussion" and "Things to Do," which come at the end of each chapter, are good devices for busy teachers. A good glossary and subject index add to the value of the book.

CHARLES E. SHEPARD

The Freezing Preservation of Foods—*By Donald K. Tressler and Clifford F. Evers. New York: Avi Publishing Company (2nd ed.). Revised and Enlarged,* 1947. 932 pp. Price, $10.00.

The 25 chapters of this handbook cover thoroughly the technology and science of frozen foods. Chapters of particular interest to public health workers deal with nutritive values, microbiology, changes occurring in preparation, freezing, storage, and thawing, and the importance of quality control and standards. Full directions for the preparation, freezing, and handling of fruits, fruit juices, poultry, meat, dairy products, fish and shellfish are included.

The importance of the frozen food locker industry is shown by the increase in number of plants in the United States to about 8,000 in 1946. The subjects of freezing equipment, principles of refrigeration, and packaging are adequately covered. The book is up-to-date. The numerous literature references at the end of each chapter make the book particularly useful for the student who desires source material or greater coverage on a particular subject. The 209 illustrations aid materially in clarifying the text and in making the book easy to read.

CARL R. FELLERS

Ground Water in the Baltimore Industrial Area—*By John C. Geyer. Baltimore, Md.: State Planning Commission,* 1945. *Publication 44.* 299 pp. Price, $1.00.

This important and well prepared publication contains considerable information on the ground water resources of the Baltimore industrial area where about 40,000,000 gallons of ground water are pumped each day, chiefly from wells drilled in the Coastal Plain sediments of Cretaceous age. The pumpage of this large quantity of water, together with improper maintenance of wells, has caused several serious ground water problems. These are: contamination of aquifers by salt and acid waters, decrease in yield of wells, decline in static water levels in wells, and loss of wells from structural failure of screens or casing.

The chief purpose of the publication is to analyze the cause of these problems and to present methods of correcting or preventing them. It also is intended to furnish a basis for further detailed studies. In addition to a detailed analysis of the ground water problems, the publication is well documented with several appendices containing a large amount of factual data, such as records of wells and well logs.

Although the occurrence of ground water in the Baltimore area is complex, the data and interpretations are presented so clearly that the reader should experience no difficulty in obtaining an understanding of the ground water conditions. The publication will be particularly valuable to the numerous establishments in the area that obtain their water supplies from ground water sources. It also will be of interest and value to all persons concerned with the development or study of ground water supplies in other areas.

ROBERT R. BENNETT

Health and Body Building—*By Frank Merrill Wheat and Elizabeth T. Fitzpatrick. New York: American Book Company,* 1947. 517 pp. Price, $2.08.

This is a textbook prepared to meet the needs of high school pupils as outlined in the New York State Syllabus for Health Education. The book is conveniently divided into ten units, each headed by a positive statement, e.g., Unit IV—"To Function Efficiently your Body Parts must be in Excellent Health." Each unit is made up of chapters introduced by a question, e.g., "What are the Units and Larger Parts of Body Structure?" These chapters close with suggested things to do and some review questions which emphasize the principal points in the chapter.

The material is, as a whole, scientifically correct and is presented in a manner that is interesting to the adolescent and also may be challenging to those who wish to delve deeper. Emotional appeal is, rightly, almost absent but the appeal of fear is somewhat overused, as is the reference to World Wars I and II. As these events move into the background the references will have less meaning.

Building of character and useful, happy lives has been brought out very well by units on personal health and appearance, mental health and behavior, and community living. The content regarding the anatomy of body systems—digestive, circulatory, musculature, etc.—is covered quite completely, but that of the reproductive system has been left out. This omission was undoubtedly intentional, as many schools will not allow sex education.

This book is more than merely informative of basic scientific facts. It is constructive. It encourages the use of these facts to build "happy, resourceful, productive lives." If but one textbook can be used by pupils, this one appears to be very appropriate.

CATHARINA HUNTSMAN

Harvey Cushing: A Biography—*By John F. Fulton. Springfield, Ill.: Thomas,* 754 pp. 150 illus. Price, $5.00.

Here is a first rate biography of a distinguished surgeon whose professional life was spent at Hopkins, Harvard, and Yale. Written by Dr. John F. Fulton, Sterling Professor of Physiology at Yale, the style is reminiscent of that which Cushing set for his life of William Osler.

Although Cushing was a neurological surgeon, his influence was a wide one and such fields as endocrinology and the history of medicine were greatly enriched by his contributions. In later life he took an interest in the field of social medicine and lent his influence to the study of public medical care and health insurance. He advocated a type of federal organization for public health like that currently proposed in Congress.

For those who fell under Cushing's influence this book is not to be missed. For all it portrays the life of a great doctor in fascinating style.

REGINALD M. ATWATER

Radio—How, When and Why to Use It—*By Beatrice K. Tolleris. New York: Russell Sage Foundation,* 1946. 46 pp. Price, $1.00.

In 46 fact packed pages, this booklet analyzes and offers sound solutions to the problems faced by health, welfare, and community organizations who want to reach the radio public.

Knowledge acquired by painful trial and error methods through years of educational broadcasting by organizations throughout the country is assembled here. As a standard textbook on radio broadcasting for non-profit agencies, it belongs in the reference library of every organization that is using or planning to use radio in its public relations program.

A guide to the organization that is just embarking upon the use of radio media, it is also a check list against which agencies can test the effectiveness of their existing programs.

In six readable sections, interspersed with enlightening examples taken from current programs, the booklet discusses points to be considered in deciding whether radio is the medium needed. It describes the various types of program formats, the purpose each serves, and how to use them effectively. It points up the advantages and disadvantages of joining with other organizations in coöperative broadcasts and in securing guest time on existing local and network programs. It offers suggestions for getting time on the air, for maintaining mutually beneficial relations with

the radio stations, and for building up the audience you want to reach.

JEAN HENDERSON

Vitamins and Hormones—Advances in Research and Applications, *Vol. IV. Edited by Robert S. Harris and Kenneth V. Thimann. New York: Academic Press,* 1946. 406 pp. Price, $7.00.

The excellence of the fourth volume of this series indicates that there is sufficient progress in the field of vitamins and hormones to warrant yearly reviews, and that the editors are able to obtain capable contributors. It is immediately evident to the reader, and the editors comment on the fact, that three chapters in the volume deal specifically with interrelationships between nutrition and hormones: Effect of B Vitamins on the Endocrinological Aspects of Reproduction, by Hertz; Nutritional Therapy of Endocrine Disturbances, by Biskind; and the Protein Anabolic Effects of Steroid Hormones, by Kochakian. The first three chapters should be especially valuable to public health workers. Pfiffner and Hogan present a very readable and yet thoroughly complete summary of The Newer Hematopoietic Factors of the Vitamin B-Complex. Regardless of all additional knowledge which must of necessity become available with further work, the chapter on Nutrition and Resistance to Infection will remain a classic in this field. The chapter by Clements on Manifestations of Nutritional Deficiency in Infants will be very useful, although the subject is presented in a textbook form rather than as a critical review of recent research. The remaining chapters include timely subjects reviewed by well known workers in each of the fields: The Thyroid and Diabetes, by Houssay; Thyroactive Iodinated Proteins, by Reineke; and Methods of Bioassay of Animal Hormones, by Thayer.

C. A. ELVEHJEM

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

A CASE WORK APPROACH TO SEX DELINQUENTS. Rosa Wessel, Editor. Philadelphia: Pennsylvania School of Social Work, 1947. 132 pp. Price, $1.50.

THE HEALTH EXAMINATION (rev. ed.). New York: Community Service Society, 1947. 42 pp.

MALARIA CONTROL ACTIVITIES IN GREECE DURING 1946 (mimeo.). By Dr. Gr. A. Livadas and Dr. George D. Belice. Athens, 1946. 22 pp.

NURSING FOR COMMUNITY HEALTH. By Theda L. Waterman, R.N. (2nd ed.) Philadelphia: Davis, 1947. 421 pp. Price, $3.50.

NUTRITIONAL AND VITAMIN THERAPY IN GENERAL PRACTICE. By Edgar S. Gordon, M.D. (3rd ed.) Chicago: Year Book Publishers, Inc., 1947. 410 pp. Price, $5.00.

PENICILLIN THERAPY. By John A. Kolmer, M.D. (2nd ed.) New York: Appleton-Century, 1947. 339 pp. Price, $6.00.

PROCEEDINGS OF THE NATIONAL CONFERENCE OF SOCIAL WORK. New York: Columbia University Press, 1947. 608 pp. Price, $5.00.

PUBLIC AGENCY — COUNCIL RELATIONSHIPS. Health & Welfare Planning Dept. New York: Community Chests and Councils, Inc., 1946. 48 pp. Price, $.75.

REHABILITATION THROUGH BETTER NUTRITION. By Tom D. Spies, M.D. Philadelphia: Saunders, 1947. 94 pp. Price, $4.00.

THE RELATION OF DISEASES IN THE LOWER ANIMALS TO HUMAN WELFARE. By William A. Hagan, et al. New York: New York Academy of Sciences, 1947. pp. 351–576.

TOMORROW'S FOOD. By James Rorty and N. Philip Norman, M.D. New York: Prentice-Hall, Inc., 1947. 258 pp. Price, $3.50.

VETERINARY BACTERIOLOGY. By I. A. Merchant. (3rd ed.) Ames, Iowa: Iowa State College Press, 1946. 683 pp. Price, $7.00.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Good **News for Young Mothers**—Research in the prophylactic possibilities of gamma globulin yields the following findings: if given within 6 days of exposure it prevents measles 4 times out of 5 and modifies the infection in almost all other cases; given early, and in hefty doses it reduces the case incidence of infectious hepatitis; it seems likely that it may help against scarlet fever, but not against poliomyelitis, chickenpox, or infantile diarrhea. When processed from convalescent plasma, the homologous globulin is effective against mumps and whooping cough.

BERENBERG, W. Gamma Globulin as a Prophylactic and Therapeutic Agent in Communicable Disease. Milbank Quart. 25, 2:115 (Apr.), 1947.

Experience **Is Essential to Knowledge**—"Words are not tools for teaching nutrition." I'm tempted to let the quote stand alone as the annotation for this stimulating discussion. I've decided I will, for if it doesn't tease you into hunting out the paper, nothing will.

BOSELY, B. A Practical Approach to Nutrition Education for Children. J. Am. Dietet. A. 23, 4:304 (Apr.), 1947.

Remember **Typhoid Mary?**—Seems like old times to run across a lecture on typhoid carriers. This senior officer from the British Ministry of Health rather ponderously declares that carriers may be found by resourceful detective work, involved bacteriologic technics, and teamwork by experts in the field.

BRADLEY, W. H. Methods Adopted in the Detection of "The Carrier." J. Roy. Inst. Pub. Health & Hyg. 10, 3:86 (Mar.), 1947.

"Have a Health Examination."—Among the lessons learned from six hard and lean years of promoting prepaid medical care plans is this one: thorough physical examinations and (except by hypochondriacs) medical consultation on general conditions of health are *not* sought by patients. Those of us who prate about semi-annual physical examinations after 40 as the solution to the cancer problem should digest this bit of gristle.

CARLTON, W. The Problem of Social Medicine: Equilibrating the Distribution and Technology of Medical Care. New England J. Med. 236, 14:493 (Apr. 3), 1947.

Richettsias Condensed — Reduced to practical details, this discussion of the rickettsial diseases and their vectors is addressed to nurses but it is just as appropriate for inspectors or medical social workers or whatever specialty in the public health field you happen to be pursuing.

DYER, R. E. What the Public Health Nurse Needs to Know about Rickettsial Diseases. Pub. Health Nurs. 39, 3:124 (Mar.), 1947.

Booster Doses, the Answer—Virulent diphtheria swept through a girls' school (British) in which 94 per cent of the children had been immunized and 80 per cent were found Schick-negative. Ruefully concludes the reporter, even a highly immunized community is not entirely safe. Don't you love the "entirely" understatement? In following papers two other doctors (from Belgium and India) report upon penicillin in the treatment of diphtheria.

FANNING, J. An Outbreak of Diphtheria in a Highly Immunized Community (and two related papers). Brit. M. J. 4498:371 (Mar. 22), 1947.

Rheumatic Fever Follows Strep Epidemics—Two per cent of all school children in the United States have heart disease as a result of rheumatic fever.

This is the first of many accusations directed at the worst of the enemies of childhood. Every youngster with a streptococcal throat infection is a potential rheumatic fever subject, says this writer, who tells what to do about it.

GRIFFITH, G. C. Rheumatic Fever. J.A.M.A. 133, 14:975 (Apr. 5), 1947.

One for Air Sterilization—Contagion due to contact between patients cannot be prevented by ultraviolet air sterilization, say these researchers, but the lights do prevent air-borne distant spread of infection and—for custodial institutions—the cost is justified.

HIGGINS, R. A., and HYDE, G. M. Effect of Ultraviolet Air Sterilization upon Incidence of Respiratory Infections in a Children's Institution. New York State J. Med. 47, 7:707 (Apr. 1), 1947.

Science Leavened with Common Sense—"And the School Nurse" might have been omitted from the title of this brief review of recent findings in child development and new-day trends in child care, for it is a useful paper for all who have anything to do with the health of youngsters.

HILDRETH, G. Child Development and the School Nurse. Pub. Health Nurs. 39, 4:181 (Apr.), 1947.

Mind Over Matter—Steel workers were divided into three groups: one received vitamin pills, the second placebos, the third nothing. Later the groups were reversed. There was no indication that the vitamins had any measurable effect. Absenteeism due to illness was lowest in the placebo group. There was less *voluntary* absenteeism in both vitamin and placebo groups than in the pill-less third.

IVY, A. C., *et al.* The Effect of Administering a Vitamin Supplement, in Capsules, to Groups of Workers in a Steel Industry. Indust. Med. 16, 4:163 (Apr.), 1947.

Working at Pertussis Prevention—Presented here is convincing evidence that both the morbidity and mortality rates of whooping cough are lowerable by community vaccination programs. Booster doses of combined whooping cough and diphtheria antigen are needed at school entrance, for then the child meets increased exposure to both diseases.

KANDLE, R. P. The Control of Whooping Cough. Pub. Health News (New Jersey State Department of Health). 28, 8:229 (Apr.), 1947.

Seasons and Polio—Does poliomyelitis virus persist in urban sewage all the time? If it does would this fact seem to suggest that outbreaks are due to lowering of human resistance at certain seasons? Well, with the most sensitive methods at his command, this researcher could recover virus from sewage only in epidemic years and then only in late summer and early fall. It cannot be concluded from his study that the nature of epidemics is due to seasonal variation in host susceptibility.

MELNICK, J. L. Poliomyelitis Virus in Urban Sewage in Epidemic and Nonepidemic Times. Am. J. Hyg. 45, 2:240 (Mar.), 1947.

Bricks Without Straw—Administrators who are hard up now for doctors to staff their agencies or institutions will find little comfort in the Surgeon General's prophesy that, if present training programs are not enlarged, we shall be short 30,000 doctors by 1960. The number of dentists needed, and not being trained, verges on the astronomical. When it comes to future shortages of nurses, the S. G.'s prophetic powers fail him.

PARRAN, T. Hospitals and the Health of the People. J.A.M.A. 133, 15:1047 (Apr. 12), 1947.

Big Job Well Done—Ninety-five doctors, nurses, dentists and dental hygienists work a full school day to improve the health of 116,000 Pittsburgh school children and this service costs $2.70 per child. If you are interested.

you will find the working plan outlined for your benefit.

SMITH, L. M. Health Service in the Pittsburgh Schools. J. School Health. 17, 4:95 (Apr.), 1947.

Problems of Out-and In-Migration—Though our farm population increased by more than 1¼ millions in two recent years it was still smaller, by 11 per cent, than in 1940, and smaller than it had ever been in the last fifty years. Though a severe depression might boost farm in-migrations, it is not likely otherwise that we shall ever again see so large a part of all Americans living on farms as in 1940. This phenomenon has many social and hygienic implications. Does it have any bearing on your future job?

TAEUBER, C. Recent Trends of Rural-Urban Migration in the United States. Milbank Quart. 25, 2:203 (Apr.), 1947.

"So High and Mighty"—What pregnant women worry about and how public health nurses can help in this mental hygiene problem are discussed here. We need more practical papers like this. One guided mother-to-be characterized her guide with the quotation above.

ZIMMERMAN, K. A. The Public Health Nurse and the Emotions of Pregnancy. Pub. Health Nurs. 39, 2:63 (Feb.), 1947.

A.P.H.A. membership application blank on page XXVIII.

ASSOCIATION NEWS

Vocational Counseling and Placement

The Association's Vocational Counseling and Placement Service frequently receives inquiries from weary employers who have been struggling without sufficient personnel. The question generally asked is: "What percentage of the vacancies now existing for physicians, nurses, engineers, and other professional groups can be expected to be filled this year, next year, by 1950?"

The accredited schools of public health in the United States have increased their enrollment considerably during the academic year just ending. According to preliminary figures compiled by the U. S. Public Health Service, the graduate student enrollment was 63 per cent higher during 1946–1947 than during the academic year 1945–1946. The total number of graduate students from the United States and the Territories was 521. Of these, 155 were physicians, 137 health educators, 41 engineers, 53 laboratory workers, 27 statisticians, 37 nurses, and the remaining students were representatives of other professional groups. Among the native students, at least 56 per cent were already committed to an employer at the time they entered school. According to information at hand, many of the remaining 44 per cent had already found employment for the end of the current school year.

It is difficult to estimate how long it would take to fill existing vacancies at the present rate of training since there are no recent overall figures available. The statistics of the Vocational Counseling and Placement Service of the American Public Health Association offer a representative picture, although not a complete one. At the last count, a total of 738 openings was registered as against a total of 157 candidates for positions. Among the openings, 408 were for physicians (at least one-fourth requiring an M.P.H. degree). This means that it would take almost the total enrollment of physicians in schools of public health in 1946–1947 to fill only the vacancies requiring an M.D. and an M.P.H. degree as known to the Vocational Counseling and Placement Service. The statistics of this Service reflect the same discrepancies of demand and supply for public health engineers, trained health educators, and statisticians.

A large number of openings still exists in the field of public health nursing. A recent survey of nursing needs in public health agencies conducted by the U. S. Public Health Service reveals that the total number of vacancies expected on July 1, 1947, will approximate 3,500. This figure exceeds the full-time enrollment of nurses at schools of public health nursing and schools of public health.

A consideration of the enrollment at schools of public health, public health engineering, and public health nursing would not give a complete picture of personnel resources since most agencies, as part of their recruitment efforts, will accept newcomers without a public health degree, planning to send them to school at a later date. It is difficult to evaluate at this point how effective recruitment measures conducted by various official and voluntary agencies have been. The American Public Health Association's Vocational Counseling and Placement Service has taken every opportunity to recruit personnel. It was

first established in the fall of 1945 as a coöperative project of the U. S. Public Health Service and the A.P.H.A. One of its prime objectives was to attract to the public health field men and women who received pertinent training and experience in the armed forces. Recruitment is carried on primarily through counseling on an individual basis. In addition, talks to groups of college students, conferences with counselors in related agencies, and other collective measures, such as publication and distribution of vocational booklets, are parts of the program.

Low salaries are only part of the explanation for our present shortage of personnel. The advantages of careers in the field of public health are not sufficiently known to young people deciding upon their future vocation. The gap can be closed through efficient and energetic recruitment wherever and whenever possible.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

John A. Barger, M.D., Municipal Courts Bldg., Room 19, St. Louis 3, Mo., Supervisor, Venereal Disease Control Service, City Health Dept.

Bernard Bucove, M.D., D.P.H., Medical Health Officer, Weyburn, Saskatchewan, Canada

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Herbert L. Mantz, M.D., 618 Professional Bldg., Kansas City, Mo., Tuberculosis Controller, City Health Dept.

Byron O. Mork, Jr., M.D., Worthington Clinic, Worthington, Minn., Chairman, County Public Health Nursing Committee

Andrew W. Orlowski, M.D., 19 Mason St., Torrington, Conn., City Health Officer

Jorge Quinteros C., M.D., Calle Mexico No. 152, La Paz, Bolivia, S. A., Director, Dept. of Venereal Diseases, Cooperative Service of Public Health

Leo Schnur, M.D., Pima Indian Reservation, Sacaton, Ariz., Senior Physician, Office of Indian Affairs

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Dr. David S. K. Dai, Chengtu, Szechwan, West China, Elected Member 1945, Dental Health Section

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Mrs. Ruth G. George, R.N., Columbia, S. C., Elected Member 1937, Elected Fellow 1944, Public Health Nursing Section

Arthur D. Knott, M.D., D.P.H., Camilla, Ga., Elected Member 1924, Elected Fellow 1933, Elected Life Member 1934, Health Officers Section

Bernard V. Lally, M.D., Tiffen, Ohio, Elected Member 1946, Health Officers Section

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CLOSING DATE FOR SUBMISSION OF FELLOWSHIP APPLICATIONS

August 1 will be the last date on which Fellowship applications can be accepted for consideration at the 1947 Annual Meeting in Atlantic City.

Eligible members who wish to apply for Fellowship this year are therefore urged to send in their applications as early as possible.

ERRATA TO NINTH EDITION OF THE STANDARD METHODS FOR THE EXAMINATION OF WATER AND SEWAGE

The following corrections are called to the attention of anyone using the Ninth Edition of the Standard Methods for the Examination of Water and Sewage:

1. Page 24 Sec. 10, B, 1.6. The formula for determining the reagent value of potassium palmitate should read: Mg. $CaCO_3$ per ml. potassium palmitate = ml. standard calcium chloride soln ÷ ml. potassium palmitate soln.

2. Page 54 Sec. 24, D, 3, line 6 should read: To about 40 ml., add 5 ml. of 3 N HCl. . . .

3. Page 216 Appendix I, left column, Sec. 4, 3, line 31, sentence should read: Copper does not interfere below 0.2 ppm. (Delete the words " the maximum limit permissible according to the 'Drinking Water Standards' of the U. S. Treasury Dept.")

The above corrections concern the only errors appearing in the Ninth Edition that have been called to the attention of the editorial staff. Members of the Association and users of the Methods are requested to transmit a record of any other errors discovered to:

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Executive Secretary,
American Public Health Association
1790 Broadway, New York 19, N. Y.

SEVENTY-FIFTH ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
ATLANTIC CITY, N. J., OCTOBER 6–10, 1947

HOTEL RATES, ATLANTIC CITY, N. J.

BOARDWALK HOTELS

Hotels		Total Rooms	Rooms with Bath	
			Single	Double
AMBASSADOR	Brighton Ave.	670	$6.00–$9.00	$9.00–$14.00
APOLLO	New York Ave.	51		8.00– 12.00
BREAKERS	New Jersey Ave.	475	4.00– 7.00	5.00– 12.00
BRIGHTON	Indiana Ave.	291	7.00–	9.00– 14.00
CHALFONTE-HADDON HALL	North Carolina Ave.	1,000	6.00–10.00	8.00– 18.00
CHELSEA	Morris Ave.	400	5.25– 6.75	6.75– 15.00
CLARIDGE	Park Pl.	406	6.00–14.00	9.00– 17.00
DENNIS	Michigan Ave.	475	6.00– 8.00	9.00– 14.00
MARLBOROUGH-BLENHEIM	Park Pl.	464	6.00–10.00	9.00– 16.00
MAYFLOWER	Tennessee Ave.	280	5.00– 6.00	7.00– 12.00
NEW BELMONT	S. Carolina Ave.	100	5.00– 6.00	7.00– 12.00
PRESIDENT	Albany Ave.	500	7.00–10.00	9.00– 15.00
RITZ-CARLTON	Iowa Ave.	431	6.00– 8.00	9.00– 14.00
ST. CHARLES	St. Charles Pl.	300	5.00–12.00	7.00– 14.00
SEASIDE	Pennsylvania Ave.	235	5.00–11.00	8.00– 14.00
SHELBURNE	Michigan Ave.	300	6.00– 9.00	9.00– 12.00
STRAND	Pennsylvania Ave.	271	4.50– 6.00	9.00– 12.00
TRAYMORE	Illinois Ave.	600	6.00–14.00	9.00– 18.00

AVENUE HOTELS

Hotels		Total Rooms	Rooms with Bath	
			Single	Double
BOSCOBEL	Kentucky Ave.	120		$8.00
CLARENDON	Virginia Ave.			7.00
COLTON MANOR	Pennsylvania Ave.	208	$5.00–$9.00	8.00–$12.00
COLUMBUS	Pacific Ave. at St. James	100		6.00
CRILLON ★	Pacific Ave. at Indiana	49		8.00– 10.00
EASTBOURNE	Pacific Ave. at Park	75		7.50– 8.00
FLANDERS	St. James Pl.	125	5.00	7.00– 9.00
FOX MANOR	Pacific Ave. at Belmont	60		8.00– 10.00
HOLMHURST	Pennsylvania Ave.	100		7.00– 8.00
JEFFERSON	Kentucky Ave.	150	6.00	7.00– 10.00
KENTUCKY	Kentucky Ave.	110	3.50	6.00– 7.00
LAFAYETTE	N. Carolina Ave.	100	5.00– 6.00	8.00– 10.00
MADISON	Illinois Ave.	210	4.50– 6.00	7.00– 10.00
MONTICELLO	Kentucky Ave.	175		7.00
MORTON	Virginia Ave.	300	5.00– 6.00	7.00– 9.00
PENN-ATLANTIC	S. Carolina Ave.	125		7.00
RUNNYMEDE	Park Pl.	75	4.00– 7.50	6.00– 10.00
SENATOR	S. Carolina Ave.	260	4.50– 7.00	7.00– 12.00
STERLING	Kentucky Ave.	83	4.00– 5.00	6.00– 7.00
VILLA D'ESTE	Pacific Ave. at Chelsea	40		8.00– 14.00

★ Rate Includes Breakfast

See Application Blank, next page

A MESSAGE FROM THE CIRCULATION DEPARTMENT

Because public health workers are notoriously frequent movers hundreds of changes of address are reported to the Circulation Department each month. These changes are recorded promptly. Occasionally, however, a member will write in complaining about non-receipt of *Journals* and report for the first time a new address which has been in effect for several months.

New address notifications received before the 15th of the month will catch the next issue of the *Journal*. Those received between the 15th and the end of the month will be made with the *Journal* published the month after the next. It will assist the Circulation Department and benefit the individual member if address changes are reported to the Association a month in advance.

Members are also urged to notify their post offices of their new address when they move and to instruct that mail be forwarded.

APPLICATION FOR HOTEL ACCOMMODATIONS

American Public Health Association, October 6–10, 1947

NOTE: Single rooms are very limited in number. Please arrange to occupy twin-bedded rooms.

HOUSING BUREAU, 16 Central Pier, Atlantic City, N. J.

Please reserve the following:

Hotel.....First Choice Hotel.....Fourth Choice

Hotel.....Second Choice Hotel.....Fifth Choice

Hotel.....Third Choice Hotel.....Sixth Choice

..... Room(s) with bath for ..... person(s). Rate $..... to $..... per room.

Arriving Atlantic City....., hour ..... A.M. P.M. Leaving.....

NOTE: You will receive confirmation direct from the hotel accepting the reservation when made.

Rooms will be occupied by:

Name	Street Address	City	State

EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

Address all correspondence to the Employment Service, A.P.H.A., 1790 Broadway, New York 19, N. Y., unless otherwise specified.

Positions Available

(Supplemental to list in May Journal)

Public Health Staff Nurse in planned teaching center. Public Health Certificate desirable. Generalized program. Supervision. Opportunity for advanced education in Public Health. Salary depends on qualification. Write to Dr. F. M. Teeple, M.D., M.P.H., Health Commissioner, or Mrs. Esther B. Bartlett, R.N., B.S., Director of Nurses, Wood County Bowling Green General Health District, Bowling Green, Ohio.

Bacteriologist, male, with Master's degree and minimum of two years' experience in public health bacteriology. Good opportunity for merited advancement. Apply to Georgia Department of Public Health, Atlanta 3, Ga.

County Public Health Physicians. Several positions for qualified public health physicians in Oregon counties. Salary $6,600 to $7,800; ample travel and expense allowances; qualifications—graduation from an approved school of medicine; interneship; eligibility for medical licensure. Positions under Merit System. Apply to: Mr. A. T. Johnson, Merit System Supervisor, 1022 S.W. 11th Ave., Portland 5, Ore.

Health Officers in the Florida State Board of Health. Will need six Health Officers for positions as directors of County and District Health Departments, beginning July 1, 1947. Salaries will run from $5,700 to $6,300 per annum, depending on training and experience. Necessary mileage in addition at 7½¢ per mile. The State has a Merit System and Retirement System for Security. Address Wilson T. Sowder, M.D., State Health Officer, Box 210, Jacksonville, Fla.

Nurses for central California full-time health unit: 1 supervising public health nurse with degree in public health and 3 staff nurses with certificates in public health. Salaries open. Direct inquiries to Dr. C. S. Ambrose, Box 110, Visalia, Calif.

Educational Supervisor, experienced, with degree in Public Health Nursing. Staff of 11 nurses; student program; 40 hour week; salary open. Apply. Visiting Nurse Association, Evanston, Ill.

Positions available: (1) Public health nursing supervisor, (2) staff nurses for Allegan County Health Department, resort center of Southwestern Michigan. Personnel policies offer: 40 hour, five day week; one month vacation; sick leave; liberal salaries and car maintenance allowance. Attractive rural county of 43,000 population situated on Lake Michigan, less than 150 miles from Detroit and Chicago. Health department established 16 years, budget over $48,000, capable clerical staff, student training program; new director was recently appointed. Generalized challenging and stimulating program. Write, Arthur G. Baker, M.D., Director, Allegan County Health Department, Allegan, Mich.

Supervisor for staff of eight nurses in health department conducting school health demonstration and generalized program. State qualifications in application. Minimum salary $2,280 and travel allowance. Write Director Joint Health Department, 106½ E. 9th St., Winfield, Kan.

Public Health Nurses for generalized nursing program. Salary range $225–$255 per month. Under civil service, 40 hour week, vacation and sick leave privileges. Cars furnished. Write Director of Public Health Nursing, City of Seattle, 504 County-City Building, Seattle 4, Wash.

Medical Social Workers by State Agency rendering eye medical care to those unable to pay for these services; as well as rehabilitation and physical restoration services. Position requires worker with educational background of R.N. and public health training, who has had experience in the field of medical social case work or with private social agencies. Ability to plan for executing work efficiently is a necessity. Write **Box T-1,** Employment Service, A.P.H.A.

Director of County Health Work in West Virginia State Department of

Health, Charleston. Salary $6,000 plus travel. Position under state merit system. Qualifications: M.D. with three years' full-time experience in the field of public health. Must be eligible for West Virginia license. Write Dr. N. H. Dyer, State Health Commissioner, State Department of Health, Charleston 5, W. Va.

The Tennessee Valley Authority announces openings in its Health and Safety Department for well qualified physicians. Training and experience in public health and employee medical services are desirable. The entrance salary is $4,950 per annum, based on a 40 hour week schedule with provision for within grade increases to $5,900. Retirement, annual, and sick leave benefits are provided. Interested candidates should write the Tennessee Valley Authority, Personnel Department, Knoxville, Tenn.

School Nurse for private school in Hawaii. To live on campus. Responsibilities: general school health and health of approximately 100 boarding school students. Three months summer vacation, 2 and 1 week respectively during school year. Write **Box V-1**, Employment Service, A.P.H.A.

Health Educator to work in close connection with a city health department in Virginia. Man or woman with M.P.H. degree, able to conduct a demonstration program of community coördination and education. Salary $3,300 plus car allowance. Write **Box W-1**, Employment Service, A.P.H.A.

Health Commissioner for combined health district, Ohio, serving population of approximately 40,000. Staff of twelve, adequate budget, established health department (23 years). Salary depends on training and experience. Write **Box H-2**, Employment Service, A.P.H.A.

Tuberculosis Medical Consultant: Qualifications: M.D. from approved school, interneship, two years' medical experience (one year in a tuberculosis hospital, sanatorium or clinic). Salary range: $5,520–$6,540 plus traveling expenses. Write Mr. R. B. Beaumier, Administrative Officer, Washington State Department of Health, Smith Tower, Seattle 4, Wash.

Public Health Nurses: Baltimore County Health Department. Population 230,000; urban, suburban, and industrialized areas; county seat 8 miles from Baltimore. Generalized service; director, 3 supervisors, 22 field nurses. Immediate large expansion planned. Beginning salary $2,000 (for trainee) to $2,500, depending on experience and education. Retirement plan; one month's vacation; 5 day, 35½ hour week; sick leave. For use of personal car, allowance of 7 cents per mile. Write to Dr. William H. F. Warthen, Health Officer, Baltimore County Health Department, Towson 4, Baltimore, Md.

Physician for combined position: Assistant Physician, Fall River Tuberculosis Hospital and Admitting Officer at Out Patient Department, Fall River General Hospital. Salary $1,400 annually plus maintenance. Write Arthur L. Ledoux, M.D., Commissioner, Fall River Board of Health, Fall River, Mass.

School Nurse: Trained in public health, for city near Detroit. Population 18,000, enrollment 3,000. Salary for first year approximately $2,800. Write **Box N-392**, Employment Service, A.P.H.A.

Public Health Nursing Supervisor in county of 35,000—100 miles west of Chicago. Must have college degree and public health training. Salary $250 monthly, plus $60 travel allowance. Write **Box N-394**, Employment Service, A.P.H.A.

Supervisor for Louisville General Hospital Laboratories, Louisville, Kentucky, affiliated with the University of Louisville School of Medicine. For details write to Louisville Civil Service Board, City Hall, Louisville 2, Ky. Salary $250–$300, depending upon training and experience of applicant.

Staff School Nurse for small, but old and well organized school health department in scenic spot on Pacific Coast. Salary approximately $2,700, 35 hour week, 9 calendar months, including 2 weeks vacation Christmas, one week Easter. Three summer months free for vacation, study or work. Annual increment for ten years, tenure after three probationary years. Must be under thirty-five, with B.A. and P.H.N. degrees, at least one year's experience in generalized nursing program. When applying send photograph of self, age, degrees, training and experience since receiving P.H.N., marital status, number of children. Position open September, 1947. Write **Box N-390**, Employment Service, A.P.H.A.

Supervising Public Health Nurse in Municipal Health Department, with four years' experience in PHN. Must have eligibility for Wisconsin registration as a graduate nurse; two semesters' study in PHN; and a bachelor's degree. Beginning salary $227 month, plus car allowance. Applications will be accepted until the needs of the service are filled. Write

Personnel Department, City Hall, Madison 3, Wis.

Sanitary **Engineer** with experience and training; particularly in sewerage work. Salary range $270 to $350 per month depending on experience. Write to J. B. Harrington, Director, Division of Sanitary Engineering, State Department of Health, Charleston, W. Va.

Public **Health Physician** to do communicable disease control work, well child examinations, and be assistant to the director of public health. The communicable disease control work includes epidemiological investigations, the supervision of a tuberculosis x-ray program, and the conduct of venereal disease clinics. Full-time position in a staff of fifty employees. Salary, $5,400 to $6,600 plus travel expense. Write C. R. Fargher, M.D., Director of Public Health, City Hall, Tacoma, Wash.

Medical Social Worker, Montgomery County, Maryland (adjacent to District of Columbia). Completion of approved medical-social work curriculum and one year paid, full-time experience under supervision in hospital or clinic of acceptable standards essential. Beginning, $3,000 to $3,600. Write V. L. Ellicott, M.D., Health Officer, Rockville, Md.

Physicians, Male. For school health service and medical care of low income families. Five days per week (40 hours). Salary $347 monthly, plus automobile allowance $30. Retirement features. Cincinnati Health Department, City Hall, Cincinnati 2, Ohio.

Public Health Staff Nurse, Hillsdale County Health Department, Southern Michigan. Well established health department with student field training program. Requirements: public health nursing certificate and college degree. Write to Dr. F. G. Moench, Director, County Health Department, Hillsdale, Mich.

POSITIONS WANTED

Position **as Director of Food Sanitation.** Well versed in Public Health control of food products, food, milk, and meat products. Graduate dairy technology, 12 years' practical experience dairy farming, operation of milk, butter, and ice cream plants, 21 years' public health enforcement of sanitary requirements pertaining to producer-dairy and pasteurization plants, food handling establishments and meat slaughtering, and processing. Past four years as director. Organizing and stabilizing food control program for large city. Age 47. State full particulars. Good references. Write **Box L-529,** Employment Service, A.P.H.A.

Physician, five years' experience as director of public school health system, four years in army, will receive M.P.H. from accredited midwestern university in June, 1947, seeks student health or child hygiene appointment, Southwest preferred. Write **Box Q-1,** Employment Service, A.P.H.A.

Health Education Consultant—Available on a temporary or contract basis for organization and development of projects in the field of public relations. Write **Box H-532,** Employment Service, A.P.H.A.

Health Education. Community Organization. Woman, M.S., A.B., R.N., experienced in community and college teaching, community organization, preparation of health education material and group work desires responsible position. Experience includes work on local, state, and national level. Write **Box H-534,** Employment Service, A.P.H.A.

Veterinarian chiefly interested in food control (D.V.M. 1940, M.P.H. expected June, 1947); seeks position in field of food and drug administration or in food industry (laboratory or advisory). Experience: 2 years' animal disease control work (U. S. Dept. of Agriculture), 1 year meat inspection (Government), 4 years' food control and sanitation (U. S. Army Veterinary Corps). Write **Box V-300,** Employment Service, A.P.H.A.

Milk Specialist (plant, field or laboratory) interested in all phases of milk and food control, environmental sanitation, teaching. Degrees: D.V.M., M.S. (bacteriology and public health). Experience: administrative (acting director of meat and milk department, large city health department); food and drug inspector; research; private veterinary practice; live stock business. Publications mainly on brucellosis. Write **Box L-527,** Employment Service, A.P.H.A.

Editorial or Research Position. Broad experience in abstracting, translating. Four years as writer in state mental hygiene agency. Interested in preventive medicine, health education, mental hygiene, and general medical problems. Prefer East or West Coast. Write **Box M-500,** Employment Service, A.P.H.A.

Sanitary Engineer, M.S. (Sanitary Engineering), age 30, available July 1, for domestic position. Two years' experience includes sanitation director of a Michigan county health department plus training public health personnel. Veteran with overseas experience on public water supplies and sewage disposal for army camps and large European cities. Write **Box M-507,** Employment Service, A.P.H.A.

Dentist: 1942 graduate, Veteran, experienced in general and children's dentistry; postgraduate course in Full Denture Prosthesis and General Anesthesia, desires a position with a municipal, county, or state health department or school system. Write **Box A-2,** Employment Service, A.P.H.A.

Veterinarian: Age 25 years; B.S., D.V.M., seeks field or laboratory position. Major interest investigation and/or control of animal diseases communicable to man. Experience, UNRRA Agricultural Rehabilitation, university Histology laboratory, city health department diagnostic laboratory. Write **Box L-525,** Employment Service, A.P.H.A.

Engineer, M.S. degree in sanitary engineering, veteran, age 28, desires position in Eastern United States; 5 years' experience in official agency; armed forces, and industry. Write **Box E-510,** Employment Service, A.P.H.A.

Advertisement

Opportunities Available

WANTED—(a) Physician trained and experienced in infant care to direct maternal and child health services, municipal department of health; newly created position unimpeded by politics; woman eligible; $6,000 with provision for salary advancements to $9,900; large city; Middle West. (b) Two physicians to join staff of student health department, liberal arts college; one position available in June, the other in September; apartments available in new building on campus provided physicians are War Veterans; $7,000. (c) Medical officer; master's degree in public health and some experience, preferably in rural health programs; key position requiring administrative ability; $7,200, Latin America. (d) Two men and, also, woman physician, to join staff of student health department; state university having enrollment of 18,000 (13,000 men); new student health building; professional staff comprised of seven internists, three psychiatrists, allergist, with other specialties represented on part-time basis; well equipped infirmary; complete x-ray and laboratory facilities; possibility teaching appointment. (e) Well trained and experienced public health officer to join staff of city health department; Pacific Coast; $7,200. **PH6-1** Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago 11.

WANTED—(a) Dentist for public health appointment; although public health desirable it is not required; woman eligible; duties principally with children with some emergency work in department of health, winter resort city; South. (b) Dentist to join staff, state department of health, Pacific Coast; graduate training or considerable experience in public health dentistry required. (c) Public health dentist for position with public schools; promising future, well equipped clinic; opportunity for developing private practice; Georgia. **PH6-2** Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago 11.

WANTED—(a) Health educator qualified to serve as consultant to health educators on staff of state department of health; Ph.D., year of graduate training in public health with emphasis on education required; $3,600–$4,800. (b) Sanitary engineer; county department of health; staff includes three inspectors; generalized program including supervision of milk control; $3,300–$4,200 including car and expenses; East. (c) Bacteriologist qualified for position of associate professor of bacteriology; duties include directing laboratories of city health department; $4,000; Middle West. (d) Health educator; county tuberculosis association; thorough knowledge of tuberculosis required; town of 100,000, Middle West. (e) Sanitary engineer; degree in sanitary or public health engineering required; full-time teaching appointment; university school of public health; West. (f) Statistician to become associated with one of the national professional organizations; duties involve statistics on blood plasma program. (g) Milk sanitarian; municipal department of health; town of 45,000; South. (h) Bacteriologist; public health appointment; duties administrative including considerable research; $3,300; New England. (i) Health educator; city health department; 170,000 population; newly created position; excellent opportunity to develop field; minimum, $3,600. **PH6-3** Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago 11.

WANTED—(a) Director of nurses and general supervisor; public health association; generalized program; considerable traveling; administrative experience required; salaries, $4,149 per annum; Northeast. (b) Student health nurse; young women's college, enrollment of 700 students, well equipped infirmary, six weeks paid vacation annually; Pacific Coast. (c) Several staff nurses; well established health department offering generalized public health nursing service to approximately 200,000 people; urban and rural experience under supervision available; $220 with adjustments based on experience; car provided; college town of 100,000; California. (d) Industrial nurse; accredited organization offering industrial program to small industries on coöperative basis; experienced industrial nurse, competent organizer required; $200; Philadelphia area. (e) Student health nurse; liberal arts college, coeducational; preferably someone interested in working toward degree; salary dependent upon qualifications include complete maintenance, tuition; Pacific Northwest. (f) School nurse; private school conducted under American auspices in large city of

United States dependency; duties principally with boarding department which numbers 35 boys and 66 girls; salary dependent upon qualifications; beautiful campus. (g) Instructor and supervisor of outpatient nursing; teaching hospital; faculty rank; ample number of assistants; degree in public health preparation for generalized program required; West; minimum $3,000. (h) Director, recently created nursing service; experienced public health nurse with interest in pioneering required; salary dependent upon qualifications but not less than $3,300; Middle West. (i) Health educator; city health department; 170,000 population; newly created position; excellent opportunity to develop field; minimum $3,600. **PH6-4** Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago 11.

Advertisement

Opportunities Wanted

Physician well trained in public health and experienced in student health work; A.B., M.A., and M.D. degrees leading schools; graduate training in public health; several years' teaching experience; five years, director of student health service during military leave of permanent director; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Young dentist desires position involving some aspect of public health dentistry; institution; A.B. and D.D.S. degrees, midwestern universities; three years in the Navy, now in private practice; will go anywhere; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Bacteriologist; M.S., Ph.D. degrees, eastern university; six years' teaching experience; six years, bacteriologist, public health organization; has assisted in research and editorial work; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Health educator; M.S. degree in health education; doctor of education degree (major in School Health Education); eight years on staff, state university in department of health education; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Sanitary engineer; bachelor of science in civil engineering; master's degree in public health engineering; since 1940, sanitary engineer with county department of health and part-time teaching (public health) in university; seeks greater responsibilities; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Public health nurse; graduate of five year public health nursing course; B.S. degree; three years, general staff nurse, rural public health nursing program; scholarship to study health education; Master's degree in health education; eight years' important administrative experience in public health; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

U. S. REGULAR ARMY CORPS RECRUITS FORMER OFFICERS AS CLINICAL PSYCHOLOGISTS AND PSYCHIATRIC SOCIAL WORKERS

Clinical psychologists and psychiatric social workers are needed in the U. S. Army. Former officers of the U. S. Army may now apply for commission in the Pharmacy Corps as technical specialists. College graduates with a degree acceptable to the Surgeon General which will basically qualify the officer for further training in clinical psychology and psychiatric social work respectively, will be acceptable for integration into the Pharmacy Corps. Minimum requirements for psychologists include civilian experience in abnormal or clinical psychological practice and a Master's degree in psychology (specialization in clinical, educational or industrial psychology). Minimum requirements for psychiatric social workers include at least one year's study in an accredited school of social work inclusive supervised field work plus one year's acceptable social case work experience.

Closing date for applications: July 31, 1947. For further information and application blanks write to Neuropsychiatry Consultants Division, Office of the Surgeon General, War Department, Washington 25, D. C.

NEWS FROM THE FIELD

UNIVERSITY COURSES IN HOSPITAL ADMINISTRATION

Announcement has recently been made of courses in hospital administration in three additional universities—University of Iowa, Washington University, and Yale University. The latter two are made possible by the collaboration of the W. K. Kellogg Foundation.

The University of Iowa program in hospital administration will be made up of two phases, an administrative internship and an administrative residency, each lasting from six to eighteen months. The program was begun on February 1, 1947. It will lead to a Master's or Doctor's degree in hospital administration.

The Washington University graduate course in St. Louis was established in September, 1946. It is a 21 month course made up of 9 months of academic instruction and 12 months of administrative internship in an approved hospital. The course is being given by the Department of Hospital Administration in the Division of Auxiliary Medical Services of the School of Medicine.

The Yale University program is announced for September, 1947, and will be given in the Department of Public Health of the School of Medicine. Its projected 21 months of training will be divided between academic residence at the university and administrative internship at a hospital. The program will lead to a Master's degree in hospital administration.

DR. SOPER HEADS PAN AMERICAN SANITARY BUREAU

On February 1, Fred L. Soper, M.D., assumed the position of Director of the Pan American Sanitary Bureau, Washington, D. C. He succeeds Surgeon General Hugh S. Cumming (Rtd.), U. S. Public Health Service, who becomes Director Emeritus after 26 years of service.

Dr. Soper has most recently been Associate Director of the International Health Division of the Rockefeller Foundation. He served for 10 years (1930–1940) as Director of the Yellow Fever Service of Brazil. Here he organized and administered mass eradication campaigns against *Aedes aegypti* so successfully that by the end of 1933 a number of the principal ports of Brazil were completely free of this carrier of yellow fever. The same methods were later applied to other South American countries.

In June, 1944, Dr. Soper organized the Gambiae Eradication Service in Egypt. Nine months later the gambiae mosquito, which had been causing the most serious epidemic of malaria recorded in Egyptian history, was eradicated. For his work in the eradication of tropical diseases he received a Lasker award at the 1946 annual meeting of the Association in Cleveland.

During the late war Dr. Soper was engaged in typhus and malaria control in the Mediterranean area with the U. S. Typhus Commission and the Allied Military Control, among other agencies.

ADVANCED COURSE IN INDUSTRIAL HYGIENE NURSING AT COLUMBIA SCHOOL OF PUBLIC HEALTH

A new course in industrial nursing, leading to the M.S. degree in industrial hygiene, will be inaugurated in September, 1947, at the Columbia University School of Public Health (formerly DeLamar Institute) in New York. Applicants must be graduates of an ac-

credited school of nursing, have a baccalaureate degree, and must have had satisfactory experience in nursing.

The program includes industrial medical organization, occupational diseases and advanced industrial nursing practice, communicable diseases, health education, nutrition, public health practice, vital statistics, epidemiology, and field work in industry and community agencies. The course is one academic or one calendar year in length, depending on previous experience and preparation.

Senior Assistant Nurse Officer Emily M. Smith, U.S.P.H.S., will teach the industrial nursing courses. She has had experience in public health and industrial nursing and was most recently assigned to the Bureau of Industrial Hygiene of the Detroit City Department of Health.

This course for industrial nurses is a part of the generally expanded teaching program in industrial hygiene which has been established at the Columbia School of Public Health. Parallel curricula for physicians, engineers, and chemists are also being offered.

PROFESSOR WINSLOW HONORED AT YALE

On April 17, the 50th anniversary of Professor C.-E. A. Winslow's first publications, he was honored at a dinner at the New Haven (Conn.) Lawn Club by 150 faculty associates and graduates of the Yale Department of Public Health. Professor Winslow, who is an internationally known leader in public health, is Professor Emeritus of Public Health at Yale. He organized the Department of Public Health in 1915, serving as its chairman for 30 years until 1945.

Speakers at the dinner were, Dr. Hugh R. Leavell, Professor of Public Health Practices at Harvard, who represented the Yale Department's graduates; Dean Francis G. Blake of the Yale School of Medicine; Dr. George B. Darling, Director of Medical Affairs; and Dr. Milton Winternitz, Professor of Pathology.

Professor Winslow was presented with the first copy of the March *Yale Journal of Biology and Medicine* devoted entirely to 39 papers by his former students and colleagues, as well as a bibliography of 574 titles of articles, reports, and books written by Professor Winslow during the past 50 years. Among other contributors to this "Winslow" issue are the chiefs of the national health services of both the United States and Great Britain, Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service, and Sir Wilson Jameson, Chief Medical Director of the British Ministry of Health.

Another highlight of the dinner was the announcement of a Lectureship Fund in honor of Professor Winslow. To be known as the Winslow Public Health Seminar Fund, this will provide for outstanding visiting lecturers and leaders of public health seminars. The fund is being raised through contributions of associates and former students.

NEW LIGHT ON ARTERIOSCLEROSIS

Experiments in Goldwater Memorial Hospital, the chronic disease hospital of New York City Department of Hospitals, have succeeded in producing arteriosclerosis in dogs, according to a recent report. The research, carried on by Alfred Steiner, M.D., and Forrest Kendall, M.D., was supported in part by the Albert and Mary Lasker Foundation. It is expected to produce significant results in the treatment of arteriosclerosis in man to which that produced in dogs by the experiment bears a striking resemblance. The experiments are to be reported in a forthcoming issue of the *Archives of Pathology*.

NUCLEAR RESEARCH FOR MEDICAL AND PUBLIC HEALTH WORK

Joint plans of the U. S. Bureau of Standards and the U. S. Public Health

Service for a 20 million dollar national radiation institution at Bethesda, Md., have been announced by Leon F. Curtiss, chief of the radioactivity section of the Bureau of Standards. The institute would concentrate on research in radioactivity, radiobiology, and nuclear energy in general for protection of health. It would include large laboratories and a uranium pile valued at 3 million dollars. The project has been recommended by the President's Atomic Energy Commission but will require approval of Congress before it can be undertaken.

AUSTEN RIGGS FOUNDATION

The Austen Riggs Foundation, Inc. of Stockbridge, Mass., announces the appointment of Robert P. Knight, M.D., as Medical Director to assume his duties on September 1, 1947. Dr. Knight is at present Chief of Staff of the Menninger Clinic at Topeka, Kan., where he has served in various capacities since 1933.

At the same time the Foundation announced the appointment of Edgerton McC. Howard, M.D., as Associate Medical Director. He has been serving as Acting Medical Director.

The Austen Riggs Foundation was founded in 1919 by the late Dr. Austen Fox Riggs for the treatment, study, and training in therapeutic procedures of the psychoneuroses.

FIELD TRAINING FELLOWSHIPS

For several years the W. K. Kellogg Foundation has encouraged field training of engineers by the formation of county training areas in Michigan. According to a recent announcement of the Michigan Department of Health, an agreement between the W. K. Kellogg Foundation and the Michigan State Department of Health places future administrative responsibility for these training programs with the State Department of Health.

Under the present arrangement undergraduates will be accepted for training periods up to three months in length. Graduates may be accepted for a period as long as twelve months. A stipend of $100 per month is paid the undergraduate; $125 per month is paid the graduate trainee.

To be eligible for a fellowship the undergraduate must be a candidate for a degree "in one of the branches of public health (public health or sanitary engineering, dairy science, food technology, bacteriology, etc.)" in a recognized professional school. He must have completed his junior year. Graduates must have received a degree in one of the specialties mentioned above. There is no implied obligation on the part of the trainee or the Michigan State Department of Health in the matter of employment following completion of the training periods.

Inquiries should be sent to the Michigan State Department of Health, Lansing 4, Mich.

NEW MEDICAL CENTER FOR EL PASO

Following a recommendation of the U. S. Public Health Service and the Texas Hospital Service, a medical center is under construction in El Paso, Tex. It will serve 10 counties in West Texas, as well as bordering counties in New Mexico and Arizona and the adjacent state of Chihuahua, Mexico. A group of citizens will serve as trustees of the Providence Memorial Hospital, a 2 million dollar general hospital and nurse training school and residence. It is expected that these facilities will raise the ratio of hospital beds in the area from 2.08 to 4.5 per thousand.

WEST VIRGINIA STRENGTHENS PERMISSIVE HEALTH UNIT LAW

The West Virginia legsilature, on February 6, passed House Bill 52 permitting cities and counties to merge

their health departments into one city-county unit serving the entire county. The state's earlier permissive legislation made no provision for consolidation of already existing full-time county and city health departments but gave a full-time county department jurisdiction over its contained municipalities with part-time health officers.

SUMMARY OF MILK-BORNE DISEASE OUTBREAKS—1923–1945

The Milk and Food Section of the Sanitary Engineering Division, U. S. Public Health Service, has prepared a Summary of Milk-borne Disease Outbreaks Reported by State and Local Health Authorities as Having Occurred in the United States During the Years 1923–1945, inclusive.

Included in the summary are figures on the number of outbreaks, cases, and deaths for typhoid, paratyphoid, scarlet fever and septic sore throat, diphtheria, dysentery, food poisoning and gastroenteritis, undulant fever and miscellaneous.

INDIANA LEGISLATURE INCREASES HEALTH APPROPRIATIONS

The 1947 Session of the Indiana State Legislature appropriated for the State Health Department $750,000 and $780,000 respectively for the two years of the biennium. This is double the appropriation for the year 1946. In addition the Legislature appropriated nearly two million dollars for a new state public health building, to be a unit of the University of Indiana Medical Center at Indianapolis.

The Legislature also passed laws authorizing county, city-county or multiple county health units. The present five state districts were also legalized, as was the Industrial Hygiene Division heretofore operating under an executive order. A bill to provide state financial assistance to local governmental units for the establishment and maintenance of full time health departments was defeated however. It had the support of farm organizations and the state PTA Congress and will be reintroduced at the 1949 Session of the Indiana Legislature.

DR. MARTHA M. ELIOT TO SERVE INTERNATIONAL CHILDREN'S EMERGENCY FUND

It was announced on April 20 at United Nations headquarters, New York, that a survey of the relief programs now being carried out in several Central and Eastern European countries will be undertaken by the International Children's Emergency Fund, an agency of the United Nations. Dr. Martha M. Eliot, Associate Chief of the U. S. Children's Bureau, Washington, and President-Elect of the American Public Health Association, is now on leave from the Bureau as Chief Medical Consultant for the Fund.

It is expected that a group of four health and medical officers will spend several weeks touring children's institutions and inspecting other facilities. The survey will be under the direction of Dr. Ludwig Rajchman, Chairman of the Board which operates the Emergency Fund. It is expected that the Fund will help feed 20 million children, carrying out its own work through the national relief services which have been set up in each country.

NEW YORK ACADEMY MEDAL TO DR. MILLER

At its recent convocation meeting marking the end of the Centenary Celebration, the New York Academy of Medicine's Medal Award was presented to James Alexander Miller, M.D. In this citation, George Baehr, M.D., President of the Academy, referred to Dr. Miller's long activity in tuberculosis prevention, as an associate of Dr. Bigg's and Dr. Park, as president of the New York and the National Tuberculosis Associations, and as member of the

Committee on Public Health Relations for all of its 35 years, during 13 of them as Chairman.

At the convocation ceremonies also 21 distinguished physicians from various parts of the world were elected to honorary fellowship in the Academy. Two are Americans, Ernest William Goodpasture, M.D., Dean of the Vanderbilt University School of Medicine, and Alfred Newton Richards, M.D., Vice-Provost in charge of medical affairs of the University of Pennsylvania. The other 19 were: five from Great Britain, two from Sweden, and one each from Argentina, Belgium, Canada, Denmark, France, Germany, Great Britain, Holland, Ireland, Jugoslavia, Mexico, and Russia.

Among these are Sir William Wilson Jameson, Chief Medical Officer of the British Ministry of Health; Dr. Thorvald Madsen, former President of the Health Committee of the League of Nations; Dr. Manuel Martinez-Báez, Professor of the Medical School of the Nacional University of Mexico; Sir John Boyd Orr, Director-General of the United Nations Food and Agricultural Organization; Professor John Alfred Ryle, Head of the Institute of Social Medicine, Oxford University; Dr. René Sand, Professor of Social Medicine, University of Brussels; Dr. Henry Ernest Sigerist, former Director of The Johns Hopkins University Institute of Medicine and now in Switzerland continuing his studies in the history of medicine, and Dr. Andrija Stampar, Chairman of the Interim Commission of the World Health Organization.

Also elected to membership were 17 Corresponding Fellows from 10 countries. Included in this number Sir Alexander Fleming and Sir Howard Walter Florey, cowinners of the Nobel Prize for their work on penicillin, Dr. James MacAlister Mackintosh, Dean of the London School of Hygiene, Dr. Francisco deP. Miranda, Director of the National Institute of Nutrition in the Mexican Ministry of Public Health and Assistance; and Dr. Jacques Victor Jules Parisot, Director of the Regional Institute of Hygiene at Nancy.

A number of awards were made at this meeting also; ten Bowen-Brooks scholarships of $500 each given to young men returning from service for continued medical study. One Louis Livingston Seaman award of $1,000 and three of $500 each for aid in investigation in bacteriology or sanitary science were given respectively to James M. Neill, M.D., Cornell University Medical College, Arnold W. Pratt, M.D. of the same university, A. M. Poppenheimer, New York University College of Medicine and Samuel Prigal, M.D. The Edward N. Gibbs Memorial Prize of $1,500 was awarded to Stanley E. Bradley, M.D., College of Physicians and Surgeons.

PROFESSOR IRVING FISHER OF YALE DIES

Irving Fisher, Ph.D., Professor Emeritus of Political Economy at Yale University and internationally known economist, died in New York on April 29 at the age of 80. Dr. Fisher joined the American Public Health Association in 1903, receiving the 40 year membership certificate in 1943. He was a Fellow of the Vital Statistics Section and a Life Member. He was well known for a sustained interest in the economic value of life and in life extension. In late years he gave untiring efforts to plans for the prevention of inflation, having appeared in Washington on this subject in February just preceding his 80th birthday.

PERSONALS

Central States

A. C. CURTIS, M.D.,† Director of the Division of Tuberculosis Control of the Arkansas State Health Department has resumed his duties after a

year's leave of absence during which time he has secured the Degree of Master of Public Health, in the Columbia University School of Public Health, New York, N. Y.

THOMAS D. FITZGERALD, M.D., M.S.P.H.,† formerly Physician in Health Service and Lecturer in Hygiene, University of Michigan, Ann Arbor, Mich., has been appointed Director of Health Service, Illinois State Normal University, Normal, Ill.

CHANGES IN ILLINOIS HEALTH OFFICERS:

L. L. VITT, M.D., has been appointed to the position of Health Officer of the Fulton County Health Department effective April 1.

DALE SCHOLZ, M.D.,† formerly Health Officer of the City of Middletown, Conn., has been appointed Health Officer of the Lawrence-Wabash County Health Department, effective June 1.

GEORGE H. AGATE, M.D., has been appointed as Health Officer of the Will County Health Department, Joliet, effective May 1, succeeding CECIL A. Z. SHARP, M.D.,* who resigned effective April 1. Dr. Agate was formerly employed as Director of Maternal and Child Health Program in the Peoria, Ill., City Health Department.

STEWARD C. THOMSON, M.D.,† has been appointed Assistant Professor, School of Public Health, University of Minnesota, Minneapolis, Minn. During the War Dr. Thomson was with the Office of the Surgeon General, Washington, D. C., as Chief of the Collection Branch and as liaison officer with G-2, W.D.G.S.

Eastern States

MATTIE J. BULLARD, M.D.,† formerly Major, UNRRA, New York, N. Y., has been appointed Director, Medical Department, Indiana Public Schools, Gary, Ind.

CLYDE K. CONRAD, M.D., has been appointed Deputy Administrator of Health Services of the North Atlantic Area of the American Red Cross. Dr. Conrad was associated with the Brewster Aeronautical Corporation as Medical Director before the war. During the war he was Flight Surgeon with the 12th Air Force and Base Surgeon of the Glider Base in Italy.

MATILDA E. DYKSTRA, formerly with the New York City branch of the Veterans Administration, where she was chief of the nursing division, has been transferred to the National Branch in Washington, D. C., as Deputy Director of the Nursing Service.

HERBERT R. EDWARDS, M.D.,† Director of the New York City Department of Health, Bureau of Tuberculosis, has been appointed to succeed FRANK KIERNAN* as Executive Director of the New York Tuberculosis and Health Association upon the latter's retirement on September 1, 1947. Dr. Edwards is Assistant Professor of Public Health and Preventive Medicine at Cornell Medical School, Lecturer in Public Health Practice at Columbia University, Advisory Consultant to the Tuberculosis Control Division, U. S. Public Health Service.

CARL L. ERHARDT† has resigned as Assistant Registrar of Records of the New York City Department of Health to accept a position as Assistant Director of Vital Statistics of the State Health Department of Connecticut, State Office Building, Hartford.

GEORGE FAULKNER, JR., D.M.D., has joined the staff of Maine's Bureau of Health to operate the Bureau's Mobile Dental Unit serving areas where dental service is not otherwise available.

WILLIAM M. HAENZEL† became director of the Bureau of Vital Statistics, Connecticut State Department

of Health, on April 1. He succeeds WILLIAM C. WELLING who died last August. Mr. Haenzel had been associated with the New York State Department of Health since 1934.

ERNEST E. HUBER, M.D., has been appointed Senior Surgeon, Regular Corps, Active Duty, U. S. Public Health Service, New York, N. Y. Dr. Huber served until recently as Senior Surgeon, U.S.P.H.S. First Service Command, Boston, Mass.

RICHARD JONES, M.D., has resigned as Assistant Director of Health and Director of the Division of Venereal Disease Control in Maine, to reënter private practice. He will continue to direct venereal disease control work on a part-time basis.

DORIS LONGMAN and HARRIET STEVENS have been appointed to the staff of the Nutrition Service of the New York State Department of Health. Miss Longman has had nutrition teaching experience as well as field work with the Michigan and North Carolina State Health Departments; Miss Stevens recently completed five years with the Army Medical Corps as hospital dietitian.

DENNYS L. LYALL, PH.D.,* formerly Assistant Director in Charge of Antitoxin, Serum, and Vaccine Laboratories, New York State Department of Health in Albany, recently accepted the position of Health Inspector with the City Health Department of Salisbury Municipality, Southern Rhodesia, Africa.

SIBYL MANDELL, M.D., was recently appointed chief of the newly established Division of Mental Hygiene in the Bureau of Child Hygiene of Baltimore City Health Department. Dr. Mandell was most recently on the staff of the Bureau of Maternal and Child Health of the New Jersey State Health Department.

ROSCOE L. MITCHELL, M.D.,† retired on April 30 as Director of the Bureau of Health of the Maine State Department of Health and Welfare. He has reëntered private practice which he left to join the State staff in 1930. He has been succeeded by DEAN FISHER, M.D., one of the state's district health officers, who was also a state district engineer before he studied medicine.

M. VIRGINIA PARSONS, R.N.,† formerly with the Program Development, National Tuberculosis Association, New York, N. Y., has been appointed Executive Secretary of the New Haven, Conn., Tuberculosis and Health Association.

ALEX J. STEIGMAN, M.D.,† will resign from the Department of Pediatrics of Temple University Medical School, Philadelphia, Pa., to serve as Senior Fellow in Pediatrics of the National Research Council. He will work at the Children's Hospital Research Foundation, Cincinnati, Ohio, under ALBERT B. SABIN, M.D., commencing June 1, 1947.

LEON S. STONE, PH.D., Bronson professor of comparative anatomy, Yale University School of Medicine, New Haven, Conn., will receive the Robert W. Doyne Memorial Medal, an annual award of the Oxford Ophthalmological Congress in England. Dr. Stone who will go to England next summer to address the congress at Keble College, Oxford, was given the award in recognition of his work on retinal regeneration and vision experiments in transplanted eyes.

Southern States

ARTHUR G. BAKER, M.D.,† formerly Director, Johnson-Magoffin County Health Department, Paintsville, Ky., has been appointed Director, Allegan County Health Dept., Allegan, Mich.

* Fellow, A.P.H.A.
† Member, A.P.H.A.

JAMES R. COPELAND,† formerly Bacteriologist in Charge, Elkton Branch Laboratory, Maryland State Department of Health, has been appointed Bacteriologist in the Veterans Administration, Legion, Tex.

GLENN J. HAWKINS† until recently Sanitary Technician with the Army Air Forces has been appointed Public Health Engineer, Sanitary Engineering Division, State Department of Public Health, Richmond, Va.

MARGUERITE L. HAYS, R.N.,† formerly Director, Health Council, Council of Social Agencies, Dallas, Tex., has been appointed Executive Secretary of the newly organized Dallas Health Museum.

RALPH H. HEEREN, M.D.,* has been appointed head of the epidemiology section of the Oklahoma State Health Department. He has been director of the Hutchinson Memorial Clinic, Tulane University School of Medicine, New Orleans, La.

N. V. HENDRICKS, JR., has been appointed Industrial Hygienist on the executive staff of the Standard Oil Company of New Jersey beginning April 15. Just before accepting this position he was unanimously elected the first honorary life member of the Georgia Society of Professional Engineers. He has been in the Division of Industrial Hygiene of the Georgia Department of Public Health, most recently as Assistant Director.

JOE G. HUFSTEDLER, M.D., M.P.H.,† formerly Director, Knox County Health Unit, Tenn., has been appointed Resident in Pediatrics, Methodist Hospital, Memphis, Tenn.

JOHN M. MCDONALD, M.D., D.P.H.,* has been appointed Director of the Division of Industrial Hygiene, Florida State Board of Health, beginning February 1. For the past ten years Dr. McDonald was Director of the Bureau of Occupational Diseases in the Baltimore, Md. City Health Department.

DONALD B. MCMULLEN, M.D.,† associate professor of Preventive Medicine and Public Health, University of Oklahoma School of Medicine, has been granted a 2 year leave of absence to become Senior Parasitologist with the 406th Medical General Laboratory, U.S.A., in Tokyo. During the War Dr. McMullen was a member of the Commission on Schistosomiasis, Army Epidemiological Board, receiving a Medal of Freedom for his work in the Philippines and Japan.

GEORGE A. NEVITT, D.D.S., M.S.P.H.,* formerly Dental Consultant to UNRRA in Washington, D. C., has been appointed Senior Dental Surgeon, U.S.P.H.S., District 2 with headquarters in Richmond 19, Va.

RUSSELL C. NYE, M.B.A.,† formerly Administrator Parkland Hospital, Dallas, Tex., has been appointed Executive Administrator, Northwestern Hospital, Minneapolis, Minn.

Western States

CAROLYN DITTON, formerly Orthopedic Advisory Nurse with the Washington State Health Department, has been appointed Head Orthopedic Nurse at the Mt. Edgecumbe Orthopedic Hospital at Sitka, Alaska. It is the only orthopedic hospital in Alaska and is a coöperative project of the Territorial Department of Health and the Alaska Native Service.

HORACE J. DODGE, M.D., M.P.H.,† formerly Director of the Kootenai County Health Unit, Idaho, has been appointed Assistant Professor of Public Health, University of Colorado School of Medicine, Denver, Colo.

HAROLD M. ERICKSON, M.D.,* Oregon State Health Officer, has been appointed Assistant Professor of Public Health and Preventive Medicine, The

* Fellow, A.P.H.A.
† Member, A.P.H.A.

University of Oregon Medical School. He will give occasional lectures at the Medical School in Portland, Ore.

JEANNETTE (SNYDER) HILLER, R.N.,† who served until recently with the UNRRA Mission in Greece is now Divisional Supervising Nurse in the Production and Marketing Division, Labor Branch of the U. S. Department of Agriculture with headquarters in Portland, Ore.

FRED R. INGRAM, M.S.,* has been appointed Senior Industrial Hygiene Engineer, Bureau of Adult Health, State Department of Public Health, Berkeley, Calif. Mr. Ingram was formerly Chief, Division of Industrial Hygiene, University of Colorado, Denver, Colo.

HARRY S. STAHR, M.D.,† has been appointed Assistant Surgeon, Captain of the Veterans Home of California, Napa County, Calif. Dr. Stahr was formerly School Physician, Los Angeles Public Schools, Calif.

MAURICE D. VEST, M.D.,† has been appointed as Director, Maternal and Child Health Section, Oregon State Board of Health. He was formerly Director of the Division of Crippled Children in the Colorado State Health Department.

ALFRED T. WILLIAMS, C.PH.M.,† most recently Assistant Sanitation Officer and Rodent Control Officer of the U. S. Naval Operating Base in the Midway Islands, has been appointed Chief Sanitary Inspector, U. S. Naval Station, Division of Sanitation, San Diego, Calif.

Foreign

ARTHUR STOLL, M.D., Basle, Switzerland, internationally known authority in pharmaceutical chemistry, has been honored with the publication of a special anniversary issue of the *Swiss Medical Journal*.

* Fellow, A.P.H.A.
† Member, A.P.H.A.

Deaths

RAY G. HULBURT, Editor of the *Journal of the American Osteopathic Association*, died on April 15 after a 4 months' illness.

WILLIAM M. MCKAY, M.D.,† State Health Commissioner of the Utah State Department of Health, Salt Lake City, died April 13. Dr. McKay had served for several years, during which time the department had been greatly strengthened. He cooperated in the building of the Utah Public Health Association into a state professional society of vigor and influence.

DWIGHT M. WARNER, Lecturer in Social Hygiene for the Wisconsin State Board of Health, died March 24 in an automobile accident.

CONFERENCES AND DATES

American College of Hospital Administrators:
Third New England Institute for Hospital Administrators, Brown University, Providence, R. I. June 19–28.
Maritime Institute in Hospital Administration. St. John, New Brunswick, Canada. June.
Third Western Institute for Hospital Administrators. Stanford University, Palo Alto, Calif. August.
Fifteenth Chicago Institute for Hospital Administrators. University of Chicago, Chicago, Ill. September 2–12.
Annual ACHA Convocation and General Assembly of Membership. St. Louis, Mo. September 21–22.

American Congress of Physical Medicine. 25th Annual Scientific and Clinical Session. Hotel Radisson, Minneapolis, Minn. September 2–6.

American Dental Association. Annual Meeting. Boston, Mass. August 4–8.

American Dietetic Association. Philadelphia, Pa. October 13–17.

American Heart Association. Annual Meeting. Hotel President, Atlantic City, N. J. June 6–8.

American Hospital Association. Annual Convention. St. Louis, Mo. September 22–25.

American Public Health Association—75th Annual Meeting. Atlantic City, N. J. October 6–10.